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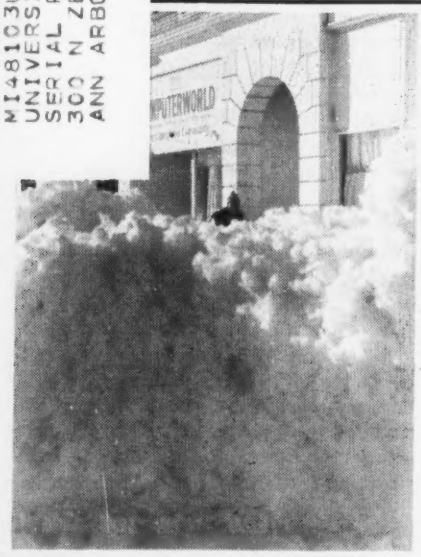


By hook and by crook — and even by snowplow — CW staffers struggled to work last week, three days after the Blizzard of '78 hit the Northeast. In top photo, Editor Drake Lundell helps dig a path to the front door; below, those who managed to find a way to Newton use a parking meter to measure the depth of the snow.

CW Photos by J. Edmonston

Better Late . . .

NEWTON, Mass. — If you had a hard time getting in touch with *Computerworld* last week, it's because most of us weren't here.

The worst storm in New England history slammed into the Massachusetts coast Monday afternoon, Feb. 6, leaving behind three feet of snow driven by hurricane force winds into drifts over 10 feet high.

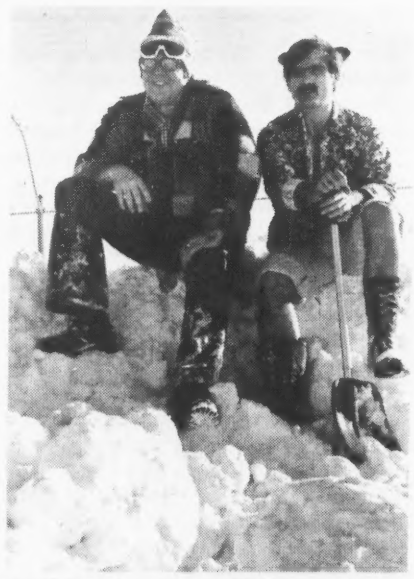
The storm completely shut down the eastern part of Massachusetts for the rest of the week as the governor declared a state of emergency that banned all automobiles from the road.

With 4,000 Army and National Guard troops trying to dig out from under the storm — and more than 10,000 people put up in shelters after abandoning cars on the highways — the state was crippled. More than 5,000 cars blocked roadways and hampered snow removal efforts.

Despite the ban on travel, a few members of the CW staff somehow made their way into *Computerworld*'s offices — some skied, a few walked as many as six miles, one even thumbed a ride on a snowplow. And they managed to produce this paper and hopefully get it to you close to the time you would have received it normally.

You will notice a few things are different in this issue, however. For one thing, there is no classified section. All ads scheduled for this week will run in the issue of Feb. 20, if advertisers wish. In their place is the first part of Chapter II of *Tsunami* by Charles P. Lecht.

Further, also as a result of the storm, the CW Special Report on Distributed Processing, originally scheduled to appear in the Feb. 27 issue, will appear in the March 6 edition.



Lundell joins Peter Holm, assistant production manager, for a rest.

Changes to SSA Law Ease Reporting Needs In Payroll Applications

By Edith Holmes
CW Washington Bureau

WASHINGTON, D.C. — DP managers involved in payroll applications may have to reprogram their systems to accommodate a new data exchange between the Social Security Administration (SSA) and the Internal Revenue Service (IRS) — but not nearly to the extent originally thought necessary.

The SSA-IRS information scheme, approved by Congress more than two years ago in an effort to reduce employer paperwork, was amended with the Dec. 15 passage of the Social Security Amendments Act of 1977. As a result, data fields for quarterly wage information that were to have been added to the familiar W-2 form, the statement of income tax withheld on wages, are no longer required by law.

The IRS last week issued a press release asking the nation's employers to disregard the four boxes for quarterly wage information on the 1978 W-2 forms. DP managers, too, should ignore the boxes and the need for accumulating four separate data items.

Passed on Jan. 2, 1976, the original law instructed the IRS to simplify the filing of Form 941, the employer's quarterly federal tax return, beginning Jan. 1, 1978. Until this year, the form included a section called Schedule A that required employers to list each employee's name, Social Security number and earnings for that quarter.

The IRS used only the cumulative

(Continued on Page 4)

Commerce Warns DP Sites: Beware of Graphite Fibers

By Edith Holmes
CW Washington Bureau

WASHINGTON, D.C. — Fibers so small they can only be detected in the air by a laser beam can wreak electrical havoc on computer and communications equipment, according to the U.S. Department of Commerce.

While they help make such products as aircraft, automobiles and tennis rackets lighter and stronger, carbon/graphite fibers can cause power failures, shorts or arcing that damage electronic equipment, the Commerce Department said.

The fibers are a problem because they are good electrical conductors and light enough to float through the air like ordinary dust particles, the agency said.

When a car crashes near a computer center or a discarded tennis racket is burned at the local dump, the fibers released into the air can find their way through the center's filtration system to short out the computer operation.

DP managers should be sure their air filter systems can keep the fibers from the computer system or terminal environment. Even those filter systems that can resist carbon/graphite fibers may need more frequent maintenance, Commerce said.

Commerce has launched a five-year, $31.7 million program to study these troublesome but useful fibers because the agency expects them to be found in more and more items made from high-strength, light-weight composite materials. The study will draw on the resources of several government agencies.

Among the agencies to be involved is the National Aeronautics and Space Administration (Nasa), which first observed the effects of carbon/graphite fibers when they are accidentally set loose in the air.

In a technical memorandum, Nasa

(Continued on Page 4)

Ansi Getting Near Standard On I/O Interface

By Molly Upton
CW Staff

SAN DIEGO — The proposed standard on channel-level I/O interfaces may at last be nearing consideration by the American National Standards Institute's (Ansi) Board of Standards even though it did not receive the required two-thirds vote of approval from the institute's X3 committee.

The Board of Standards is the body that decides whether Ansi will authorize and endorse a proposed standard. The I/O channel interface draft has undergone several years of consideration by various Ansi committees.

At a meeting here last week, X3 voted to recommend the proposed standard to the Ansi Board of Standards after a 30-day period. During that time, the X3 members will be able to consider responses from the X3T9 technical subcommittee, which has received copies of the negative votes on the X3

(Continued on Page 4)

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Compliance With Privacy Requirements Can Yield Better DP Security: Novotny

By Edith Holmes
CW Staff

WASHINGTON, D.C. — Many privacy requirements for automated recordkeeping systems, including the individual's right to inspect and challenge his records, can result in improved DP security practices, Eric J. Novotny, senior associate with Computer Resource Controls, said at a recent conference here on the private sector and privacy legislation.

Companies forced by law or through voluntary compliance into designing their DP systems with privacy in mind will find they must examine security in an explicit way — perhaps for the first time, Novotny told industry officials attending the meeting, which was sponsored by AMR International, Inc.

Paths of information structured around a privacy-oriented disclosure policy will improve management control of data, for example, the consultant stated. Similarly, storage of information in a form other than a single, complete record not only guards against invasion of individual privacy but also protects against fraud and disaster, he added.

Difficulties in Translation

On the other hand, while privacy may cause security to assume its rightful place as a central organizational concern, conflicting levels of regulations will make privacy difficult to translate into information systems design, Novotny said.

To illustrate his point, Novotny detailed the experience of one of his firm's clients, a large health care organization faced with satisfying the privacy constraints of its local professional standards review organization (PSRO), the Department of Health, Education and Welfare's (HEW) welfare regulations and the Medicare requirements dictated by the Federal Privacy Act of 1974.

These three levels of compliance ranged from stipulations as to the color and data field arrangement of punch cards to the timeliness and accuracy of the information and procedures for accounting for the data's disclosure outside the organization. The burden of satisfying these requirements fell to the DP manager, Novotny said.

The DP manager was faced with "horizontal conflicts" in that the data under the PSRO, HEW and privacy act regulations was of equal importance. "Vertical conflicts" arose over whether he should follow the law, the agency's guidelines, the guidelines HEW provides its contractors or the National Bureau of Standards' security guidelines under the privacy act.

For the manager, "the crux of the problem was translating the horizontal and vertical layers of privacy regulations into something he could implement," Novotny stated. He could divide his organization's information system, segregating parts of the system according to the regulations governing the data contained in them and/ or he could identify records according to which regulations applied to them by a system of flags.

The consultant recommended that before doing anything to the information system itself, each organization should assess its current privacy and security posture. Large, mature organizations should do a risk analysis that takes into account both the dollars spent for security and data disclosure inside and outside the operation.

Firms should be sure to include the cost of special DP equipment from applications software to storage devices that may be required. They must also remember they will have to have the ability to store an individual's amendments, rebuttals and corrections to his record, Novotny said.

Data Integrity

Privacy stipulations that information be accurate, relevant, timely and complete are nothing more than assurances of data integrity — something any organization needs to have. The consultant recommended that information be collected directly from the individual, whenever possible, both to ensure data integrity and to limit third-party sources.

Privacy regulations may require periodic training of the people who deal with an organization's information system in addition to a written security policy, lists of systems and safeguards.

Once an organization has analyzed its privacy status, it must determine what recordkeeping practices need to be added. The trend of legislation both here and abroad suggests that an individual within the organization should be designated security/privacy officer. That person should have some authority to work with, Novotny said.

He further stressed that the organization have a privacy budget. Out of an annual budget of $250 million, the health care organization that Novotny consulted spends $100,000 to fulfill the privacy and security requirements of its PSRO, HEW and the privacy act.

Among the specified technical safeguards this organization has implemented in order to comply with privacy constraints of its local Professional Standards Review Organization is the segregation of programmer access to software, Novotny said.

Afips Calendar Lists DP Meets

MONTVALE, N.J. — A calendar of meetings scheduled in the computing and information processing field has been published by the American Federation of Information Processing Societies, Inc. (Afips).

The calendar will list meetings sponsored by Afips constituent societies as well as regional conferences, special interest symposiums, workshops and related gatherings, a spokesman said.

Complimentary copies of the calendar are available through the editor, Afips Master Calendar, 210 Summit Ave., Montvale, N.J. 07645.

Calendar

March 15-17, New York — **Terminal-Based Systems,** sponsored by American Institute of Industrial Engineers (AIIE). Contact: Dept. PR, AIIE Seminars, P.O. Box 3727, Santa Monica, Calif. 90403.

March 15-17, Tampa, Fla. — **11th Annual Simulation Symposium** Contact: W. Kent Stow, General Electric, P.O. Box 8555, Philadelphia, Pa. 19101.

March 15-17, Washington, D.C. — **Data Processing: An Introduction to Concepts and Systems.** Contact: Don Welsher, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held March 20-22 in Chicago.

March 15-17, Philadelphia — **Data Base Management Systems: General Concepts and Planning Guidelines.** Contact: Don Welsher, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held March 29-31 in San Francisco.

March 20-21, Washington, D.C. — **Data Communications: Advanced Concepts and Systems.** Contact: Don Welsher, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 3-4 in San Francisco.

March 20-22, Portland, Ore. — **Oregon Report on Computing.** Contact: Terry Hamm, Tektronix, Inc., P.O. Box 500, MS 60-456, Beaverton, Ore. 97077.

March 20-22, Los Angeles — **Project Management for Computer Systems,** sponsored by the University of Chicago. Contact: Heidi E. Kaplan, Dept. 14NR, New York Management Center, 360 Lexington Ave., New York, N.Y. 10017.

March 22-23, Cambridge, Mass. — **Implementing a Transparent Data/-Voice/Image Communications Net: Packet Switching and Its Alternatives,** sponsored by the Yankee Group. Contact: The Yankee Group, Harvard Sq., P.O. Box 43, Cambridge, Mass. 02138.

March 27-29, Dallas — **Ninth National Data Processing Security Seminar,** sponsored by Data Processing Security, Inc. Contact: Jon Allen, program director, Data Processing Security, 235 N.E. Loop 820, Hurst, Texas 76053.

March 28-30, Paris — **Theory and Practice of Programming.** Contact: Secretariat de Colloque, Institut De Programmation, 4 Place Jussieu, 75230 Paris Cedex 05, France.

March 29, Toronto — **Hardware/-Software Evaluation Seminar,** sponsored by the Association for Systems Management (ASM). Contact: ASM, Suite 500, 55 University Ave., Toronto, Ont. M5J 2H7, Canada.

CUSTER

Migrating to MVS? Have a safe trip. Don't get ambushed by the wrong sort!

Call (201) 568-9700.

SyncSort rescue parties available on short notice.

1978? It's liable to be the *migratingest* year since the old Oregon Trail was closed down for lack of interest.

A lot of solid data-processing citizens — you may be one of them — are going to auction off the old system, pull up stakes and head out for the promised lands of MVS or VS1.

And IBM will be only too happy to help you get there! No doubt you've grown accustomed, these past few years, to the strident yells of their wagonmasters — and mistresses — "Head 'em up! Move 'em out!"

Well, great, we say. For the adventurous data processor with an itch for multi-programming, the streets of MVS and VS1 are paved with gold. Neither system is nearly as wild and woolly as it once was. Why, nowadays, even a sweet young programmer can walk down the streets without any problems at all!

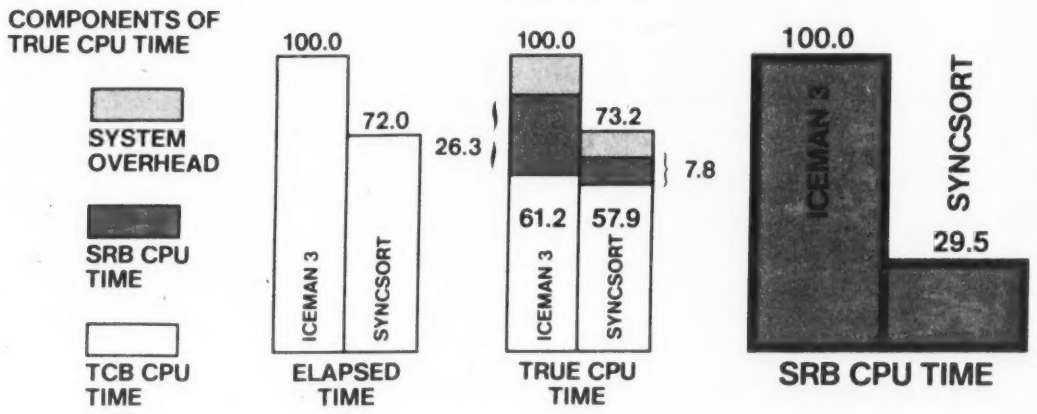
All the same, there are some dangers to keep an eye peeled for in the new land. No. 1 on the list is software that doesn't perform as well out there on the Frontier as it did Back Home.

In some sort programs, for example, there's a sneaky little component called "locked-up True CPU Time"— and it can be as paralyzing to a multi-programming system as a rattlesnake bite to a rabbit.

Like the mighty Sioux Nations, True CPU Time in MVS is divided into Systems Overhead and two other territories:

- TCB Time (Task Control Blocks), which is *interruptible*. If the CPU wants to switch signals, the message gets through and the cavalry arrives on time.
- SRB Time (Service Request Blocks), which is *non-interruptible*. The message doesn't get through and another one of those deplorable DP massacres occurs.

Take a squint at the charts below, particularly the two on the right. They compare SyncSort's overall performance with that of IBM's 5740-SM1, Release 3. *SyncSort has 70% less of that venomous locked-up time:*



But don't take our word for it it! Ask your friendly IBM rep. Chances are, he or she will look embarrassed and try to divert your attention to the shiny hardware goods laid out on the blanket.

If you keep probing, though, Old Straight Arrow will probably whisper, "If I was you pardner, I think I'd go with SyncSort."

And you woudn't expect Old Straight Arrow to speak with forked tongue, would you?

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SSA Amendments Ease Programming Changes

(Continued from Page 1)

earnings and tax data contained on the 941 form itself; the agency previously dispatched Schedule A forms to the SSA, where they were used to update Social Security earnings records, an IRS spokeswoman explained.

Congress decided in 1976 the SSA only needed to update this information annually rather than every quarter. The legislature's more recent amendments to the Social Security laws have not changed that decision; employers won't have to file Schedule A forms, thus eliminating one DP task.

Employers will continue to file 941 forms with the IRS, but these will simply summarize wages taxed, taxes deposited, income taxes withheld and employee Social Security taxes, the IRS spokeswoman said.

Because the SSA still needed quarterly wage data to determine employee Social Security benefits, Congress initially directed employers to include quarterly employee earnings information in the annual W-2 form; four data fields would have had to be added to the form to represent each of the quarters, requiring major systems work for many organizations.

DP shops would have had to program their systems to accumulate four separate data items representing employee wages for each quarter. Four separate fields would have had to be added to each employee record.

Programs directing the system to assign back pay to the appropriate earnings quarter, for example, would have had to be written.

These system changes would have had to be in place by the end of the first quarter of this tax year — early in April.

But all these system alterations were swept away by the latest Social Security Act amendments, which automatically assign employees a quarter of Social Security coverage for each $250 of Social Security wages they earn, up to four quarters in one year.

In other words, if an employee earns $1,000 in wages taxed under the Social Security laws during January, he has earned his four quarters of benefit credits for 1978. The SSA need no longer account for these funds on a strict quarterly basis.

The DP job facing many organizations has thus been reduced to simple print programs to accommodate the 1978 W-2 forms.

Have many organizations already adjusted their DP systems to meet the requirements of the combined IRS-SSA wage reporting system? "I doubt that many firms have begun to pull their DP operations in line with the new — now old — requirements," Robert S. Willard, director of the Data Processing Management Association's Washington office, said.

"Some of the more advanced firms would have maintained their employee wage information as four separate data items for their own accounting purposes," he added.

DP operations will have to work around the four boxes provided on the W-2 forms. "These boxes obviously will be off the 1978 tax forms," the IRS spokeswoman said. The use of 1977 W-2 forms for this tax year won't be acceptable, however, she warned.

In addition, employers will file W-2 forms with the SSA rather than with the IRS, as has been done in the past. The SSA will forward relevant tax information to the IRS.

Air Filters Urged in Fight Against Graphite

(Continued from Page 1)

said nearly all industrial plants producing and using the fibers have experienced malfunctions of their electrical and electronic equipment. In some cases, the plants have had fires.

These industries have limited such problems by controlling the fibers as they are manufactured and by taking measures to protect their electronic equipment and circuits, Nasa said. The plans have eliminated exposed conductors, often by coating them, and have installed fan filters.

Airborne fibers coming into contact with the exposed electrical circuits of a communications terminal can cause an arc that will melt or erode the terminal, Commerce suggested in announcing its governmentwide study.

Electronic components, too, can be damaged by a momentary short circuit caused by a carbon/graphite fiber. As soon as the energy in the circuit burns the fiber away, the computer or terminal will operate again.

The damage may seem slight, but even momentary shorts can stretch the capabilities of electrical and electronic components so they will no longer operate within the specifications they were built to meet, the agency warned.

Limited research suggests that air filtering is the most effective method of preventing contamination and damage of equipment by carbon/-graphite fibers."Many types of sensitive electronic equipment [such as computer systems], that are cooled by forced air flow already employ dust filters," Commerce noted.

Filter systems for computer equipment can be made to keep carbon/-graphite fibers out of the machinery's air, the department said.

The primary focus of the federal inquiry into these fibers will be an assessment of the risks associated with using them and of modifications to fiber technology that might reduce or remove the threat to electrical and electronic equipment, Commerce stated.

While Commerce looks into the effect the fibers have on commercial and household equipment, including computer and communications systems, Nasa will attempt to develop alternative materials that do not have the same undesirable characteristics.

If possible, the federal government would like to continue using the fibers. The composite materials the fibers help to make are important to the national economy because of the weight savings and the smaller amount of energy required to use the airplanes, cars and other items made from them.

Ansi Nearing I/O Standard

(Continued from Page 1)

ballot.

In that letter ballot, the proposed standard — which is also being considered by the National Bureau of Standards as a Federal Information Processing Standard [CW, Feb. 6] — received 28 affirmative votes and 14 negative votes from members of the X3 committee. Two members abstained and six did not respond, according to Bill Hanrahan, director of standards for the Computer and Business Equipment Manufacturers Association.

During the 30-day review period before the draft standard goes to the Board of Standards, it is possible X3 committee members could change their votes, Hanrahan said.

Under Ansi rules governing committees, a proposal must be submitted to the Board of Standards if it receives a favorable two-thirds vote. If it receives only a majority vote, however, the committee has the option of submitting the standard to the board, according to C.W. Arnott, Board of Standards secretary.

In its 18-13 vote to forward the draft interface standard to the Board of Standards, the X3 committee recognized the proposal does not have the two-thirds affirmative vote required by X3 procedures.

The Board of Standards reviews all the comments and procedures followed and makes a judgment if there is evidence of consensus, Arnott said. Among the factors considered are the significance of the opposition's comments regarding their involvement and use of the standard.

Of the 11 members of the Board of Standards, eight affirmative votes are required in order to approve the proposal as an Ansi standard. Although the chairman of the Board of Standards is with IBM, he does not vote on matters relating to information systems, Arnott said.

CDP Exam Sites Added

CHICAGO — The Institute for Certification of Computer Professionals (ICCP) has announced it will administer the 1978 examination leading to a Certificate in Data Processing (CDP) at additional sites to accommodate the needs of those candidates seeking certification under special conditions.

The examination will be given at locations from White Horse in the Yukon to Sao Paulo, Brazil, including Vancouver, B.C.; Kowloon, Hong Kong; Saskatoon, Saskatchewan; Juneau, Alaska; and Moorehead, Minn., a spokesman said.

The examination will also be administered in Upland, Ind., and at three different military installations under the guidance of the Defense Alliance for Non-Traditional Educational Support, he stated.

Additional information is available from the ICCP at 35 E. Wacker Drive, Chicago, Ill. 60601.

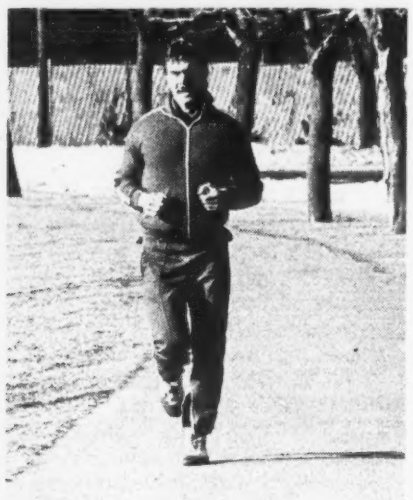
To Pinpoint Weaknesses

Systems Help Analyze Athletes' Movements

By Tim Scannell
CW Staff

CENTRE, Pa. — Scientists here at Pennsylvania State University are using computers to study the motion of the human body in an effort to improve athletic performance and reduce the risk of sports-related injuries, according to Dr. Richard C. Nelson, a physical education professor at the university and director of that school's Biomechanics Laboratory.

Biomechanics, a science pioneered by the East Germans, is the study of the forces applied to and by the human body. "By understanding these phenomena of movement, we can pinpoint a person's deficiencies in certain athletic activities and recommend appropriate corrections," Nelson explained.



Scientists at Penn State used a PDP-11/34 to analyze the stresses placed on running shoes.

One application of this relatively new science was analyzing various types of running shoes for a national sports magazine, Dr. Peter R. Cavanagh noted. "To provide the validation of that study, what we did was attempt to measure what the forces are underneath the foot, when somebody is running, with a piece of apparatus called a 'force-plate,' " Cavanagh, an associate of Nelson, explained.

Data was collected on an analog tape recorder and analyzed at the lab on a Digital Equipment Corp. PDP-11/34. "By measuring the force environment that the shoe has to face, we can define what the shoe has to do as far as absorbing energy is concerned," Cavanagh continued.

Presently, there are many brands of shoes on the market, each one offering various degrees of padding, support and shock protection, Cavanagh said. "Our study has shown that there is a 100% variation in the different running shoes as to how much energy they can absorb" and how much protection they can provide for an individual, he remarked. "By giving the consumer this information" and pointing out the limitations in some shoes, "we can help him to decide which particular one is right for him," Cavanagh stated.

Study of Bicycling

In another study, computers were used to measure the force applied in pedaling a bicycle. "We have some special pedals connected to a computer that measures the force exerted on the pedals and collects this data on-line," Cavanagh stated. "Supposing we find that a person is asymmetrical (ill-proportioned) in his manner of pedaling or that he is not pulling up on the toe-clips.' Then, we're able to make corrections," he said. "As the person tries out the suggested corrections, we can give him visual feedback on the CRT display and let him see what's happening," Cavanagh pointed out.

Through a process called programmed stimulation, a computer can also be used to improve muscle activity, Cavanagh noted. This would involve the introduction of electrical stimulus, cued by a computer, to specific muscle tissue, Cavanagh said. "By applying electrodes to the surface of a muscle and passing a current through, the muscles can be made to contract," he explained.

In the case of someone who has suffered a spinal injury, the muscles will have no connection with the brain, even though they are completely intact, he said.

Left immobile, the muscles would eventually atrophy and disappear, but if electrical stimulation is begun early enough, this process can be halted, Cavanagh stated.

If, for example, five muscles were affected "and you knew the sequence of their operation was 5-4-2-3-1 and that these muscles had to be active from 50 msec to 100 msec, then you can easily produce that pattern of stimulation with a computerized device," he explained.

Cavanagh pointed out, however, that the experiment has not been applied to humans and " ... the farthest they ever got was to make a frog do something that vaguely looked like jumping."

Russians actually monitor muscles in activities such as weight lifting then try to condition movements by electrically stimulating these muscles at the instant they are used, he said.

Biomechanics can also be used in designing artificial limbs.

Other Crimes Alleged

Agents Charged With Data Theft

By Jeffry Beeler
CW Staff

BRIDGEPORT, Conn. — Two agents of the U.S. Drug Enforcement Administration (DEA) are standing trial here for their roles in an alleged conspiracy to sell computerized data about individuals associated with the drug world and DEA investigations.

Government prosecutors in the case charge that when the agents, Paul A. Lambert and George E. Girard Jr., illicitly removed data from the DEA's Narcotics and Dangerous Drug Information System (Naddis), they were trying to ensure the success of a cocaine smuggling operation the agency had been investigating for some time [CW, Sept. 12].

Besides being charged with conspiracy to sell secret investigative data, the two men are accused of conspiring to sell cocaine and to commit murder.

Attorneys for both the government and the defendants declined to answer specific questions about the case while the trial is in progress. For this reason, they failed to say exactly what kinds of data Lambert and Girard are accused of trying to sell, to whom they allegedly planned to sell it and whom they are charged with conspiring to kill.

That self-imposed silence, however, has not prevented certain details about the case from becoming public as the trial has unfolded.

DEA Set Trap

Recounting the main events preceding the two agents' arrests, U.S. Attorney Richard Blumenthal, the chief prosecutor in the case, told a trial jury here recently that the DEA had suspected someone of removing data from its central computer long before it discovered the alleged thief's identity.

Unable to prove any wrongdoing, the agency created a fictitious file for a nonexistent individual named Richard Lumiere. It then entered the false data into the IBM 370/155 and waited for the unknown thief to take the bait.

At about 10 p.m. last July, Lambert, unaware that a trap had been set for him, returned to DEA headquarters and removed from the agency's central computer the Richard Lumiere file, which he believed to be authentic, the government charged in its indictments. As he visited the computer room, however, the drug agency secretly videotaped his actions — a procedure made possible with the help of a DEA undercover informant named — appropriately enough — James Bond.

Lambert then passed the data to Girard, who in turn tried to sell it to Michael Levine, another DEA agent masquerading as one of the co-conspirators, Blumenthal said.

Elsewhere in its indictments, the government accused Girard of passing a kilogram of cocaine to Levine and later discussing with him the possibility of murdering someone whose identity has not yet been publicly disclosed.

No Legal Precedents

Commenting on the charges, Girard's attorney, Robert Collins of Boston, denied that his client had committed a crime, primarily because existing statutes governing the unauthorized disclosure of data cover only defense secrets and hard-copy records. "If someone removes a ledger book, a piece of paper or some other piece of tangible information from a premise without authorization, you might have a crime," he explained.

Intangible

"But there are no legal precedents for the theft of intangible property like computer information."

Collins also accused the drug agency of trying to "frame" his client. He attributed the alleged conspiracy against Girard to ill will the agent had engendered among staff members at the DEA's Boston office, where he used to work. Some of Girard's former colleagues at that office resented his public criticism of the agency and his efforts to start a union there, Collins claimed.

Lambert's attorney, Charles Shaffer, who defended John W. Dean III in the Watergate trials, declined all comment on the charges against his client.

AEDS Plans Programming Contest

WASHINGTON, D.C. — The Association for Educational Data Systems (AEDS) has announced plans for its Fifteenth Annual Computer Programming Contest for students in grades 7-12.

The grand prize winner will receive a $100 U.S. Savings Bond plus a minimum $300 grant for travel to the 1978 AEDS Convention in Atlanta, Ga. on May 15-19, 1978, the spokesman said. Deadline for entries in the contest is March 1, 1978.

Details on the contest and application blanks can be obtained from Ben Jones, AEDS Programming Contest, OTIS 1200 Highway 99N, Eugene, Ore. 97405.

Britons Laud HIS' Bachman

WALTHAM, Mass.— Charles W. Bachman of Honeywell Information Systems, Inc. has been named a distinguished fellow of the British Computer Society.

Bachman also won the Association for Computing Machinery (ACM) Turing Award in 1973 for his data base system research.

The principal architect of HIS' IDS data base management system and a founding member of the Codasyl Data Base Task Group, Bachman is a current chairman of the American National Standards Institute's X3/Sparc study group on data base systems.

Bachman joins nine others who have been elected distinguished fellows of the society since 1957 for outstanding contributions to the computer industry.

Action Follows Study

FBI Moves to Comply With U.S. Privacy Act

By Edith Holmes
CW Washington Bureau

WASHINGTON, D.C. — The Federal Bureau of Investigation has moved to ensure that the indexes it uses to manage and conduct investigations — including 15 computerized file systems — are maintained in compliance with the Privacy Act of 1974.

The FBI's actions followed a two-year study by the General Accounting Office (GAO) that found more than one-fourth of the bureau's "special" indexes could not be fully retrieved through the manual Central Records System.

Because 63 of the indexes were not completely obtainable through any system of records the public knew existed, individuals using the Privacy Act to learn what information the FBI had assembled about them may not always have received full responses, the report concluded.

"The FBI should comply as quickly as possible with the Privacy Act by publishing the requried infromation about its indexes," according to Rep. Richardson Preyer (D-N.C.), chairman of the House Government Information and Individual Rights Subcommittee, which requested the study.

No Notices on 63

In its report released here this month, the GAO described its examination of 239 special indexes or records systems kept at FBI headquarters, field offices and foreign liaison offices. The study did not cover 28 classified indexes dealing with foreign counterintelligence or records systems used for internal administration.

The information contained in many of the 239 indexes surveyed is available through the Central Records System, the GAO found. But the material in 63 of these special records systems was not obtainable through Central Records or described anywhere in the bureau's notices to the public about the filing systems it maintains, the report said.

In answering Privacy Act requests for information, the FBI searches only the Central Records System unless an individual identifies some additional system or index to be searched, the GAO noted. Without public notices of records systems maintained by the FBI — notices required by the Privacy Act — the individual probably wouldn't know enough to ask that additional indexes be checked, the study stated.

The GAO recommended that the FBI either publish Privacy Act notices in the *Federal Register* for the files not retrievable through Central Records, incorporate the material in these indexes into the records systems already described in the *Federal Register* or destroy nonretrievable information contained in these indexes.

Data on 20 Million

At the time of the GAO study, the FBI had published information on 12 systems of record, including the Central Records System and the National Crime Information Center (NCIC) files.

The index to the Central Records System contains more than 59 million cards representing an estimated 20 million individuals. The GAO did not estimate how many individuals might be listed in the files not retrievable through Central Records.

Thirteen of the 15 computerized records systems not fully retrievable through the Central Records System or any other system the FBI publicized in the *Federal Register* are maintained at bureau headquarters here. They include the index on associates of the Drug Enforcement Administration's (DEA) Class I narcotics violators and computerized listings of data related to 12 major investigations conducted by the FBI.

Because the FBI assists the DEA and state and local narcotics control agencies by developing and disseminating intelligence data on illicit drug traffic, the DEA supplied FBI headquarters with a computer printout of its Class I narcotics violators — people known to manufacture, supply or distribute large quantities of illicit drugs.

The DEA also supplied the FBI with a printout of known associates of these violators, and the bureau sent all this information to its field offices.

While included in the FBI's and the field offices' general indexes, the names of narcotics violators and their associates are not retrievable through Central Records, the GAO said.

Investigations Computerized

Because of the complexity of some of its major cases, the FBI computerizes these investigations to keep track of all the information gathered on them, the GAO found. These 12 files, which include the assassination of President John F. Kennedy, the Patricia Hearst kidnapping and the disappearance of James Hoffa, were found by the audit office to contain some names that could not be retrieved through the Central Records System.

Forty-nine out of the 159 indexes maintained by FBI field offices were determined by the GAO to be "not fully retrievable" through any published system of records.

Of these 40 records systems, only two were computerized — a real estate listings file and a white-collar crime index dealing with Small Business Administration loans. Both were maintained by only one field office.

Clues to Killings Overflow Mini's Memory

By Tim Scannell
CW Staff

OAKLAND COUNTY, Mich. — An overflow of clues may be hampering police in a search here for a child killer who has already taken the lives of four area youngsters.

The large number of tips received from concerned citizens has exhausted the memory of the minicomputer used for storing and comparing them, according to a police spokesman here.

Overflow data is being recorded on magnetic tape for later retrieval and analysis, a spokesman said. However, because this new data is held separate from the facts on the system's disk file, police officials claim that investigative efforts to find the killer "could slow up tremendously."

Already, more than 14,000 clues have been collected with additional tips pouring in at the rate of 100 per day, the spokesman said. The case, going into its third year, involves a series of related homicides in which four children were kidnapped, sexually molested and then murdered.

The Hewlett-Packard Co. volunteered use of its minicomputer to the Oakland County Homicide Task Force in February, 1977, according to State Police Lt. Philip Hogan. Hogan, a member of the Uniform Crime Section, and an associate are responsible for programming the HP 3000 system. They were aided in their efforts by students from a nearby college, he said.

The State Police access the HP 3000 system, located about 30 miles away, via dial-up lines and acoustic coupler, a spokesman said.

Before the law enforcement offices had access to a computer, clues and information on the case totaling more than 5,000 pieces of paper were kept on cardboard boxes on the floor, Hogan explained.

The system is programmed to work in three ways: As a management tool; an investigative aid; and for criminal analysis, Hogan said.

Keeping Track

In a management sense, the minicomputer keeps track of the volume of data received, how rapidly tips are being followed and cleared, the extent of the workload on investigators, and the number of leads yet to be followed, he stated.

Regarding investigations, the computer searches for and isolates similar aspects of various crimes and compares the modus operandi of each one. In this case, the system would try to pinpoint cases involving child molestation and compile a victimization file. Presently, the file contains a record of every reported molesting from a year prior to the first homicide, Hogan related. Unreported attempts, obtained from school counselors and teachers, are also included in this file.

Crime Profiles

As an analytical tool, the HP 3000 constructs a profile of that particular type of crime and the psychological makeup of the individual behind such an offense. Investigators can then match different suspects with the methods used in each molesting case, Hogan said.

The computer helps eliminate the redundancy involved with investigations of this extent, Hogan stated. "When you get multiple tips on given people, it isn't uncommon for four or five investigators to visit the same place," he said. "In a parameter driven system, such as ours, we can go in and selectively categorize our tips so that when we send a team of investigators to the area, they go in with a knowledge of all the tips coming from that region."

Nothing Overlooked

Hogan also points out that no matter how trivial a tip may seem, nothing is thrown away or overlooked. "If there are 20-different people who think a certain guy is weird, that carries some weight in itself."

The State Police filed a request through State purchasing for a computer over a year ago, Hogan stated. Threatened with having to erase information from the already swollen memory banks of the HP 3000, the State has agreed to purchase a system. But, although the money has been set aside, police have had difficulty in trying to cut through bureaucratic red tape to "introduce minicomputer technology into a mainframe world," Hogan said.

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State Seeks Welfare Cheats

Ohio Legislators Debate Data Cross-Checks

By Jeffry Beeler
CW Staff

COLUMBUS, Ohio — Debate began here recently over a proposed state law that would allow authorities to catch welfare cheaters by cross-checking computerized income tax records with Ohio's relief rolls.

State Rep. Eugene Branstool, a Democrat from Utica, introduced the measure in the Ohio House of Representatives on Jan. 24. If passed and signed into law, House Bill 1032 would require the state's tax commissioner to make taped copies of income tax records available to the Ohio Department of Public Welfare.

Using a central computer in the office of State Auditor Thomas E. Ferguson, the welfare department would then compare the information on the tapes against its computerized list of the state's relief recipients.

By noting the individuals whose names, addresses or Social Security numbers appear in both sets of data, authorities could identify employees who are possibly receiving state welfare illegally.

Well-Established Practice

Computer cross-checking of the sort contemplated here is almost certain to spread to other parts of the nation in coming years as government officials intensify their efforts to eliminate welfare abuses that cost taxpayers millions of dollars annually, observers believe. Already the practice is well established in the federal government and in several states, notably California and Michigan.

Last November, the Department of Health, Education and Welfare used a computer to compare its payroll records to federal relief rolls and found more than 13,000 of its current employees on the dole [CW, Nov. 21]. In Michigan, a similar cross-checking program, begun over a year ago, has focused on workers in eight state government agencies and, more recently, on employees of five private firms, including the Big Three auto makers [CW, Jan. 23].

Advocates of cross-checking computerized records to uncover welfare fraud usually point to the practice's potential economic benefits. Ferguson estimated the proposed comparison of welfare rolls and tax records in Ohio could save state taxpayers $20 million a year.

A similar comparison audit, involving state relief records and a list of contributors to the Ohio employee retirement plan, found 666 public employees last year illegally received $1.6 million in welfare benefits, Ferguson recalled.

Opponents of the practice usually argue that computer cross-checking poses a possible risk to personal privacy; if allowed to spread uncontrollably, it could result in a nationwide surveillance network that could rob citizens of their civil liberties, they contend.

The administration of Gov. James A. Rhodes has stated its intention to preserve the confidentiality of state tax returns, but thus far has declined to say whether it favors or rejects the idea of making tax data available for comparison with welfare records, according to administrative aide Chauncey A. Cochran.

Two Clashes

Norman C. Schmidt, assistant state tax commissioner, has been more vocal in his opposition to the proposal. He warned that passage of Branstool's bill could undermine the state's working arrangement with the Internal Revenue Service (IRS), which supplies data from its files to only one state agency, the tax commissioner's office.

If House Bill 1032 passes, the tax commissioner's office might have to relay some of the IRS' confidential tax records to the welfare department in violation of its agreement with the federal agency, Schmitt explained.

The tax commissioner's determination to preserve his department's relationship with the IRS has twice led him into conflict with Ferguson and the state auditor's office.

The first of these clashes occurred more than two years ago, when Ferguson requested access to the state's income tax records, which he planned to use in a statewide search for welfare cheaters. That request was rejected, as were subsequent appeals to appellate courts and the Ohio Supreme Court.

The other run-in occurred later, when Ferguson tried to gain access to the state's motor fuel tax claims — an effort that also was stymied.

Whether Branstool's bill will pass the state legislature is the subject of some debate here. Although Ferguson claims the proposals enjoys widespread support in the Ohio House, action on the matter could be seriously delayed by a planned April recess and by campaigning in preparation for the state's November elections.

Measure of Management

Productivity Discounted as Employees' Worry

By Edith Holmes
CW Staff

WASHINGTON, D.C. — Too few DP and top employers and managers understand the productivity of their organizations is their responsibility — not their employees', according to David Skeen, director of DP in the Office of Naval Research.

Employees should have their performance measured in terms of achievement; productivity is the creation against which management should be assessed, Skeen said during the Federal DP Expo held here recently.

At the same time, employees need to understand what their skills are, to upgrade those skills and to seek broadening experiences on the job, Ronald N. Koontz, computer specialist in planning for the U.S. Forest Service, said at the seminar sponsored by the Federal ADP Users Group and the Association of Computer Programmers and Analysts.

Match Skills, Tasks

"There's a lot more to managing people than collecting time cards," Skeen stated. He suggested management consider as a key measure of productivity how well the tasks that define the organization are matched to the skills of its employees.

"People shouldn't be hired until the organization has been defined," Skeen said. A supervisory program can then be established and, from that, a career development program should be formed, he added.

Every individual in an organization should have a career plan. Skeen reccommended career counseling that takes into consideration an employee's background, goals and self-assessment.

The counseling should include a career development program that leads to a career plan for the employee, he said.

The DP director stressed the importance of involving the individual in his own career path development and in evaluations of his performance.

Nearly every DP manager could do more in this area, he suggested: "We don't do this kind of human resources evaluation enough."

Skills Chart

Koontz urged the employees in the audience to clarify their skills and understand their job responsibilities and how they relate to the organization's mission and objectives.

A skills chart can be useful in helping employee and employer understand what tasks the employee might perform best — in terms of his goals as well as the organization's, Koontz said.

Such a chart asks the employee to rate his level of competency on a scale from 1 to 10 in such areas as analysis, art, budgets, figures, follow through, imagination, people, persuasiveness, showmanship, troubleshooting, words, writing and negotiation.

"Make sure the quality of your work is good and take advantage of training opportunities provided by your organization," he added.

Koontz identified trade journals and professional groups — with their lectures and meetings — as additional sources of knowledge.

Job experience should be progressive, he noted. If an employer's present organization doesn't include the next job step he feels he needs to take, consider moving on.

Private Sector Staffs 40% of DP Revamp Team

By Edith Holmes
CW Washington Bureau

WASHINGTON, D.C. — The Office of Management and Budget (OMB) had hoped to strike a balance between the numbers of government and private-sector people participating in the federal DP reorganization project, but that goal has not been achieved, according to Walter Haase, Deputy Director for Information Systems Policy at OMB and director of the project.

Haase told a capacity audience of the Federal DP Expo here recently that instead, 40% of the people on task teams looking into such vexing areas of DP as standards, acquisition of equipment and personnel come from user companies and nonfederal organizations.

That percentage actually isn't bad, considering that OMB wanted users, rather than vendors, of computer and communications equipment who had to be senior people in their organizations and willing to volunteer their time to the federal effort.

Out of approximately 50 people serving on OMB's 11 task teams, 20 are from the private sector and 30 hail from federal agencies, Haase said. He added that OMB is still looking for five or six more task team participants.

Several of these volunteers from the nonfederal sector have been named to head the task teams. Paul Strassman, director of information services for Xerox Corp., will chair the Central Policy Task Team; Robin Hough, a professor from Oakland University, will lead the Human resources team — which includes DP reorganization in the Department of Health, Education and Welfare/ and Larry Dreeman, Coca-Cola's director of information systems, will head the National Security Task Team — which has as part of its responsibility the examination of DP in the Department of Defense.

Other private-sector participants chosen to lead task teams include Herb Pier, director of corporate planning for Allstate Insurance Co., who will head the task team on DP in small agencies; John Stucker of the University of South Carolina, who will be in charge of the task team on general government DP; and Louis Haire from Lockheed, who will chair the science and technology task team.

The teams on standards and personnel are moving more slowly than the others, Haase reported at the expo meeting. They're still under the acting directorship of Kenneth Allen, a member of the OMB Information Systems Policy Staff and of the Reorganization Project Management group.

Harris Reiche of the Department of the Interior has been chosen to head the acquisition team and Phil Kiviat, who heads the Federal Simulation Center (Fedsim), will lead the operational management team.

Haase promised that a revised study plan for all these teams will be available in the next couple of weeks. The revised plan would update the time schedule set forth in the initial Aug. 30 plan.

The reorganization project still hopes to have its recommendations to President Carter by mid-September. Haase continues to promise three public comment periods following the initial recommendations of the central policy team at the end of May.

Some of the project's recommendations, however, will be incorporated in the reorganization dealing with administrative services, and that group's final report goes to Carter in June. Haase said he believes the public will still have ample time to comment on the DP-oriented recommendations.

Pastor Plans Programs, Probes Parishioners

By Tim Scannell
CW Staff

STAMFORD, Conn. — Following each Sunday sermon, Rev. Gabe Campbell, pastor of the First Congregational Church here, makes it a practice to sit down with groups of parishioners to sip coffee and watch a little television.

What's unusal about this is that the "television" is actually a CRT terminal linked to a computer, and is part of an opinion registering system used by church members at these get togethers to comment on religious subject matter, a spokesman said.

As many as 16 people can participate at once. Using a box-like terminal with a switch, the participants can express their opinions on topics ranging from the validity of God to the existence of a literal hell, Campbell stated.

The Consensor system, manufactured by Applied Futures, Inc., is pre-programmed to respond to answers, Campbell explained. The switch is adjustable from one to ten on a yes/no opinion scale, allowing parishioners to express themselves, to varying degrees, on each question.

The system can display the weighted mean, or percentage of people voting on the different positions; and the non-weighted mean, or actual number of votes that were cast, Campbell said.

Campbell uses the system mainly as a communication tool between himself, and his preachings and his congregation. "We can deal directly with what was covered in a sermon and with questions people want to ask," he noted.

"What most often happens in churches is that we hardly ever deal with where people really are," Campbell said. "Everybody's being so nice and polite, and everybody's making false assumptions about what other people believe." Using the computer as an electronic mediator, a person will answer truthfully "without worrying about treading on somebody else's toes," he pointed out.

Although the concept of using a computer to supplement his services has been accepted pretty well by church members.

"In this age in which we live, children are very familiar with the use of computers," Campbell said. "Kids are into a whole other space and they want to talk about more significant things." Five-year olds, for instance, want to find out what happens when you leave the body and what occurs in space/time relationships, Campbell stated.

Campbell doesn't think that using the computer has resulted in any significant increase to his flock. However, some people "who may have decided not to come on a snowy day, get up and come because they don't want to miss the Consensor," he said.

Course Eyes Obsolescence

WASHINGTON, D.C. — A six-day course on Obsolescence and its Effect on the Management of Technological Innovation will be presented successively on April 21-22, 28-29, and May 5-6, 1978 at the American University in Washington.

Further information can be obtained from the College of Public Affairs, The American University, Washington D.C. 20016.

EIA Honors Dickinson

OTTAWA, Ohio — William A. Dickinson, a Design Engineering Manager with General Telephone & Electronics (GTE) Sylvania, Inc., has received this year's Electronic Industries Assoc. (EIA) Engineering Award of Excellence.

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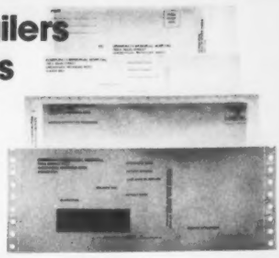

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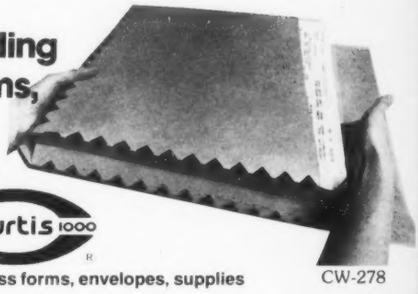

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TRANSNATIONAL DATA FLOW: THE NEED FOR ACTION

The interdependence of nations has never been more apparent than today, when the traditional sanctity of national borders holds no meaning for technological capabilities. Indeed, the acts or policies of any nation in the area of information policy set off reverberations that are felt globally in this information age.

The United States, with approximately one-half of its labor and gross national product hopelessly immersed in information products or services, virtually rises and falls with each appreciable extraterritorial legislative act or policy pronouncement in the area of information.

Nineteen European nations have so-called "data protection" laws on the books or in the making. Other nations have similar laws in force under consideration.

These laws — which allegedly preserve "sovereign" rights to collect information within national borders, control what enters and otherwise protect the privacy of citizens and the security of the respective nations — in effect block the free flow of information throughout the world.

It is incumbent upon the United States to be concerned with these developments, for our economy and way of life are increasingly dependent on the free flow and privacy of information.

Canada, for example, has expressed dismay about the volume of information flowing into U.S. computers and about the impact of the U.S. media on Canadian life. Responding to their concern about electronic data flowing to the U.S., some Canadian provinces will not let credit information out of their boundaries. The national Canadian government seems equally committed to keeping such information in the country and has forced one U.S. facility to establish a Toronto subsidiary just for Canadian data.

India, the world's largest democracy, reversed itself three years ago in an attempt to tax our news-gathering organizations out of business there. The Indian government also filed a discriminatory tax claim against *Time Magazine* that brought an end to the Indian edition of that publication. *Time*, incidentally, is now banned or has been taxed out of existence in 18 countries.

If the United States continues to ignore the need for a national policy on transnational data flow, the unhappy result will be — at best — a severe recession with massive unemployment, the former acting director of the White House Office of Telecommunications Policy believes.

For the United States — increasingly dependent on the export of information products and the import of news and other information from other parts of the world — these developments could cripple our economy and severely influence the kind of life we lead in an ever-shrinking, interdependent world community.

Almost half of our gross national product is already derived from information services and technology, according to a recent study completed for the U.S. Department of Commerce by Marc Porat of the Aspen Institute. Even more impressive, this study was based on 1967 statistics. In the next few years, by another estimate, 70 % of our labor income will be from such "information activity."

Wide-Ranging Definition

What this means is we are now no longer merely approaching the much heralded "Information Age." The Information Age is here.

The current meaning of the word "information" is broad. "Information" no longer refers to conventional bodies of statistics, facts, academic knowledge, scientific data or daily news, but instead now includes anything from the electronically sensed and transmitted, recorded and computer-analyzed human heartbeat or the electrical impulse measuring physical phenomena in space, on the ground and beneath the sea to numeric digits holding your seat on a plane or transferring funds to and from your bank account.

We are increasingly dependent on this broad definition of information for the growth and health of our economy, the smooth functioning of our institutions and the quality of our individual lives. Information means national and individual income and well being. It means money and profit to producers and employers and jobs to workers — over half of our income, jobs and gross national product in America today.

The Information War

Unfortunately, the term "communications revolution" has become blurred by excessive use and, as a result, has lost its penetrating edge. The revolution, however, is a very real event in our history, and one that may have more profound significance for Americans than the political revolution 200 years ago that created our political democracy.

This revolution is one of human affairs, perceptions and relationships, with profound significance not just for America but for the world.

This is a revolution that has altered our sense of time and distance. It is shrinking our traditional conceptions of both and, therefore, the world. With increasing pressure, it is forcing social, political and economic changes within and among the nations of the world as well as in our own individual lives.

The changes may be occurring, as some have suggested, too fast for us to comfortably absorb. Future shock may be a very real phenomenon. And, for whatever reason including future shock, the changes and thus the revolution itself are being resisted. Perhaps the resistance to the information age comes solely from the fact that, as history demonstrates over and over again, for every revolution there is a counterrevolution.

For the U.S., dependent as we now are in terms of jobs and the national economy on the production, use and transfer of information, that counterrevolution is producing what amounts to an information war.

It is analogous, in many ways, to the cold war of a generation ago, except that this war is far more complex.

What we face today is warfare on many fronts. The Soviet Union, a traditional antagonist, is only one of the many seeking to block or otherwise impede our trade in information. Others, like Canada, are long-standing friends. Still others, including many Third World countries, have previously seemed too remote and too little concerned with us to be either.

Taken together, however, these nations represent a serious threat, even though they do not always act with common design or accord. As in the Indian wars of the American frontier, there are temporary alliances by individual nations in what is, in a sense, a classic trade war. Dismissing the dilemma as a mere trade war, however, fails to fully describe this information revolution and counterrevolution.

Fear of Annihilation

Many of the countries resisting or blocking the export of our information are not concerned with competition in any literal sense. They have no information technology or industry of their own and therefore cannot hope to presently compete with technologically rich nations such as the U.S.

In that fact may lie the reason for their opposition and their fear.

What many fear is cultural inundation or annihilation. They are afraid we will overwhelm their culture and their national identity with our own. They are resisting what they call "electronic colonialization" or "electronic imperialism." They do not want their minds, banks, governments, news, literature, music or any other aspect of their lives to be Americanized. Neither do they want to be Anglicized, Sovietized, or otherwise victimized by advanced technology and information

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that freely flows across their borders, thus possibly causing their own identities to become extinct.

It is lamentable but undeniable that while we see ourselves as offering the developing nations of the world information they need to survive, such as medical and other scientific data, they perceive beyond the images and printouts of data bits, a threat of vast and unwelcome change. More specifically, they see changes in their governments and their leadership groups.

Our information, particularly when it is delivered via the computer-satellite link to a battery-operated TV or radio receiver, appears as an immediate threat to national status, power and life styles.

These and similar fears are also shared by many of the developed nations in the world. For some, the fear stems from the fact not that we are technologically advanced or information-rich, but that we believe in and are insistent upon freedom of information — freedom of action in and out of the marketplace. Although this type of freedom is a doctrine of American life, it is not commonly ascribed to on a global basis.

For these reasons we face an array of nations, to a greater or lesser degree, intent on blocking the flow of our information across their borders and possibly into the minds of their citizens. Add to this the normal competitive practices of the international market, and it is easy to see why we find ourselves opposed in this information war not only by the Soviet Union and its allies, satellite nations and Third World countries, but also by our more traditional allies, such as England, Sweden, France, Germany, Italy and Japan.

In the United Kingdom, for example, there is a British Post Office requirement that any transmitted message must be able to read by postal officials. This requirement may be applied to electronic data; as a result, ecnryption codes and data compression algorithms, when handed over to a government agency, will be useless since the privacy value will be voided.

These are the codes that, in any conceivable field of international business or finance, protect or safeguard credit, design, research, manufacturing, marketing and other privileged business information from competitors.

Elsewhere in Europe, too, for a variety of reasons, we have few friends and any opponents on the issue of the free flow of information.

The Swiss, to protect the privacy — and the attraction — of their numbered bank accounts, would throw an electronic screen around their country.

The Swedish government, prodded by their trade unions' concern with the fact that more than 3,000 computer systems holding personal data on Swedish citizens are located in other countries, blocked the transmission of some personal files out of Sweden.

The Western German Federal Data Protection Act, passed last November, attempts to set standards (restrictions or controls) on the movement and use of data stored in data banks. It's a confusing law that in essence obliges data processors to prevent unauthorized access to their facilities, to provide controls over "data linkdate" and to take technical measures to stop the "improper input, access, communication, transport and manipulation of stored data."

Belgium and France are making it a criminal offense to record or transmit some information. In France, the penalty for recording or transmitting what is vaguely defined as "sensitive" data may be a fine up to $400,000 and up to five years in jail.

Italy's communications authority has floated a proposal agreeable to the en-

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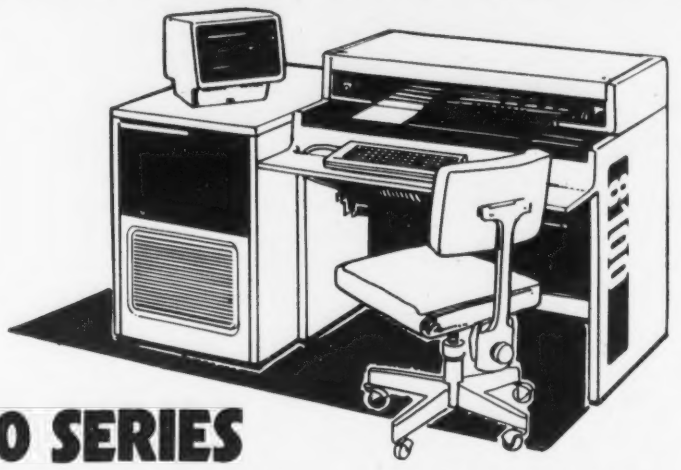

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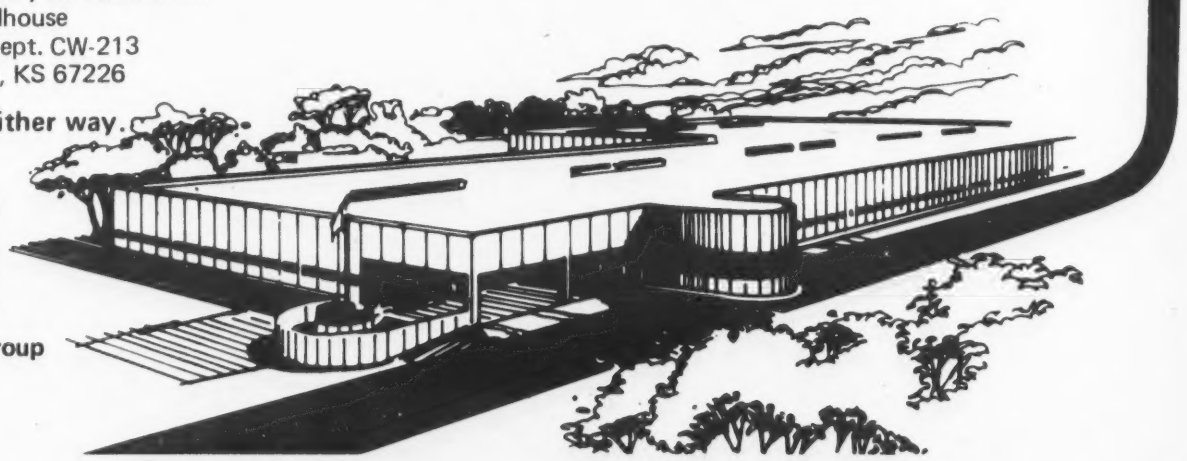

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tire European Economic Community to eliminate flat-rate charges for private telephone lines on which volumes of data are now transmitted at an affordable cost. Italy, instead, would use a fixed rate plus an individual character or message charge. This, users say, would boost costs prohibitively — by as much as three to five times the current rate.

All these protectionist steps are leading to some other potentially serious problems. First, there is the very real possibility that those countries opposing the free flow of information may be constructing a body of contradictory international law that will only lead the world from confusion to chaos in communications, perhaps blocking information flow altogether.

There is also the real possibility that in a world where the flow of information is regulated and controlled almost everywhere, "data havens" or "data refuges" will spring up in countries with either few or no laws restructing the storing, transmission and use of data.

Because computer-communications technology is too attractive to be denied, laws will not end the information revolution. Instead, data banks located in countries where it has become impossible, too expensive or cumbersome to operate, or where privacy of the data cannot be secure, will move to such a "data haven."

The resulting loss of revenue as much as the loss of control over information is unthinkable to most nations. Unwilling to free the process, they think only in terms of escalating their response to the perceived threat, possibly by banding together to harmonize, as they put it, their laws and put teeth into their determination to block the free flow of information throughout the world.

World forums, in addition to individual nations, are beginning debate over communications issues. The United States' mere physical presence and influence in the world is a source of concern to the 19-member Council of Europe in its debates over human or individual rights in the collection and dissemintion of credit, health, employment and other personal information by international data networks.

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The 24-member Organization of Economic Cooperaton and Development (OECD), whose members consist of the developed nations of the free world, including the U.S., is concerned with the economic and technological aspects of the same issue. Ostensibly concerned with the privacy aspect, but with a more fundamental interest in data trade and related economic issues, OECD recently established a subcommittee to deal with "information, computers and communications."

There are other organizations variously concerned with the issues of data privacy, trade protectionism, national sovereignty, cultural identity and technological advancement, as well as the protection of the individual from the abuses of computer banks that deny access to those on whom they gather information and thus deny their rights. Such concerned organizations include the European Economic Community (EEC), which has begun actively considering some disturbing proposals to curb the flow of information; the Nordic Council, with equally disturbing proposals of a similar nature; the United Nations Educational, Scientific and Cultural Organization (UNESCO), now seeking curbs on direct broadcasting from satellites, and the U.N. itself, where all these issues are subjects of discussion and concern.

Need for Policy

These developments — the laws, the proposed legislation, the debate — may not be viewed by some as tactics in an information war whose strategy is to weaken the United States and cut back our long-established lead in the field. They do, however, amount to the same thing since that will be the precise result if these and other such developments continue.

It does not matter whether the acts are sovereign actions in concert or the short-sighted policies of individual nations merely seeking preference in the marketplace or protection from a threat we really do not pose. The result will be the same.

The U.S. must have a national communications policy and use this as a basis to bargain for the free flow of information in every international forum, conference, meeting, discussion or agreement in which we participate.

Why is a national information policy so critical? For one thing, we alone in the world do not perceive the direct relationship between the control of information and foreign policy — and, therefore, our own national survival.

Because of our lack of understanding, we have no national communications or information policy, and we therefore find ourselves at a disadvantage in dealing with other nations which are much more aware, no matter how undeveloped they may be, of the political, economic, military and social significance of information and of our high information technology.

George McGovern pointed out that here in the U.S. "the economic ramifications of international communications and the movement of information have gone virtually unnoticed," even though in this new information age "the control of information can be a new economic weapon in the arsenals of both developing and developed nationals.

'One way to 'attack' a nation such as the United States, which depends heavily on information and communications, is to restrain the flow of information, cutting off contact between the headquarters and overseas branches of a multinational firm, taxing telecommuniations crossing borders, building information walls around a nation," McGovern noted.

The truth of the matter is that this is happening now. The attack has been under way for several years and, as McGovern said, the time has come "to take a broad look from an international perspective." McGovern says the reason why the U.S. does not yet have an overall communications policy

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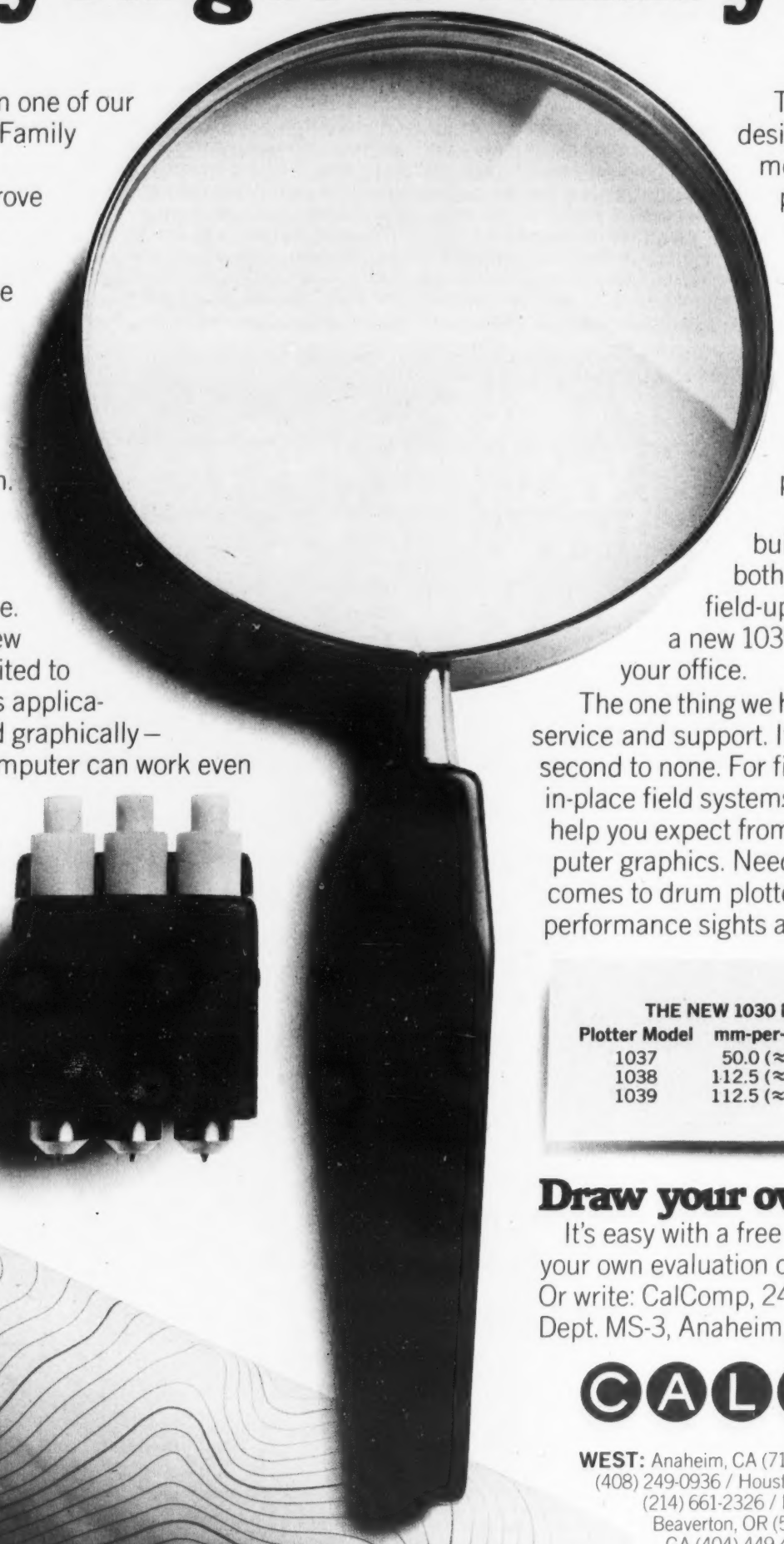

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is because there is no drive to develop policy or because we don't even know the right questions to ask.

A more plausible reason, however, may be that until just recently, for all our wealth, our freedom, our knowledge, we were so inexorably and rightly bundled in national, cultural, racial and economic security blankets that we never came to grips with the reality of how very much indeed the world has shrunk and how desperately our own survival as a free nation depends upon what kind of global information policy is promulgated.

There is no widespread awareness, however, as Secretary of State Cyrus Vance said upon his return from the North/South dialogue in Paris, that "we have concluded an era when the central question was whether to cooperate. We have begun a period in which we must develop the means and institutions for cooperation."

We have also concluded an era when the piecemeal approach to policy formulation and policy implementation is not only obsolete but dangerous. In earlier times, the expansion of new technology was welcomed without much concern for future foreign or domestic impact. Regulation and policies could easily be developed on a case-by-case basis. In fact, policy often was no more than an accumulation of regulatory decisions.

This method of policy formation is no longer effective. The quickening pace of technological advances in communications has outstripped the ability of our existing institutions to deal with emerging communications issues, and now the threat of a massive assault on our place in the world's economic system compels a reassessment of our approach to policy formulation and the institutional framework in which policy is made and implemented.

The events taking place in the world's parliaments and policy forums compel the admission that cohesive planning for the future is essential so that crises, such as those recently experienced in the energy field, will not be repeated in such an important area as communications and information.

First, A Commitment

What is needed first is a commitment to a comprehensive national information policy that will have as its foundation our traditional belief in the freedom and free flow of information throughout this nation or any other nation determined to be free, subject only to individual privacy rights.

We must also develop a unified approach to the making and the implementation of that national policy. This approach can only be taken by the highest level of government since it will be necessary to cut across long established lines of bureaucratic organization and channels of thought that have caused us to fail to recognize the interrelationship of computers, communications, information and power, and of international telecommunications and our foreign affairs and international economic policies.

Communications and policy issues must be viewed as dealing with problems that, however apparently dif-

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THE NEED FOR ACTION

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ferent, are interrelated; decisions directed at one specific problem will have consequences for others.

At the present time, no government unit or agency has the authority to respond to that reality. Only the President and Congress can give that authority, and only with a national information policy that has this authority can we survive.

Policy Integration

The task of integrating our national policy on communications and information with our domestic policies regarding competition, copyright, privacy and the like must be settled and the interweaving of those policies without foreign aid, foreign affairs and our international economic policies must begin.

For the developing nations, concerned with cultural as well as economic inundation, let us share our technological wealth, indeed give our satellite technology such as our Advance Technology Satellites (ATS), for example, in lieu of or in addition to existing aid and assistance programs, for these countries to use and experiment with as they wish without U.S. intervention.

We can no longer "throw money" at the developing nations. We must develop for them, or with them, an overall economic strategy and encourage their development with dollars, food, technology and, most importantly, information. In return, let us hope and, where necessary, bargain for the freedom and free flow of information and for the export of our information products.

On another scale and another level, we must bargain for the free flow of information and information products through multinational trade negotiations and bilateral agreements with Europe, Japan and other developed nations. Since the export of information products and the import of raw information is essential to our growing information economy, we must treat these efforts as we would any other industrial sector of our economy important to U.S. economic health.

First, however, we must either establish that the 1974 Trade Act is big enough to house our concept of "information trade" or build a legislative addition to accommodate it. At the same time, we must ensure that our system of software protection, whether by patent, copyright or trade secret, is well established. Then we must make sure our governmental machinery is adequte and has the tools to weed out and eliminate the nontariff barriers to information trade wherever they are found.

All this, of course, requires a balancing with other important trade programs and, of equal significance, requires understanding of the trade needs of the developing and developed world alike. This becomes a bitter pill for the U.S. when it means attrition and perhaps a consequent loss of jobs. This, however, is the inevitable result of free trade, of we are to have it, in an ever-expanding world economy.

We can and should prepare for these shifts domestically with full recognition by the affected industries, compensation if appropriate or necessary and job training and employment opportunities uppermost in our thinking — but protectionism is not part of the formula.

A large part of our negotiations will

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probably result in cooperative efforts to harmonize trade perspectives and monetary policy, foster market expansion and full employment, improve custom procedures and develop a full and understanding set of codes for business, cultural, educational and humanistic development. We can initiate this process by playing a substantially upgraded role in helping the OECD develop an international set of principles for the protection of individual privacy and, in the process, encourage non-OECD nations, particularly developing ones, to associate themselves with the process.

OECD countries can likewise join together to bridge the North/South gap with the developing nations by initiating programs enhancing understanding of computer-communications and space technology and assisting their development by transferring technology and promoting its useful application to their national needs. This, of course, will require some reorienting of foreign aid, closer cooperation by the World Bank, Asian Bank, International Monetary Fund and other transnational institutions, but this too is overdue and may well begin here and now.

On yet another and more complex level, the dilemma presented by communications censorship, information theft, sabotage, and manipulation requires that efforts to achieve a sort of "information detente" be undertaken. There must be reasonable limits established for certain kinds of communications tools for national defense in the same way the Salt talks seek to curb weapons escalation between the U.S. and Russia.

To date, the U.S. has no position on the international privacy issue; the Privacy Act of 1974 applies only to the government matters here at home. But the process of developing an international privacy policy has nevertheless begun.

There is every reason to believe that harmonization of privacy law — while to some a sincere and admittedly meritorious undertaking — is a shibboleth for a new form of cartelization designed to harness U.S. industry. We are ill-prepared to deal with this looming disaster.

The unhappy alternative to national policy preparedness will be economic defeat for us and, at best, a severe recession with massive unemployment. This eventuality cannot be denied when the nature of our present and future economies are clearly understood.

And, sadly for those who would block the free movement of information in the world, there would probably be even greter adverse consequences within the national borders they are now so anxious to close.

Eger, an attorney and consultant in communications law and regulatory policy in Washington, D.C., served President Gerald R. Ford as acting director of the White House Office of Telecommunications Policy from September 1974 until August 1976.

Prior to that appointment, he spent four years as legal assistant to Federal Communications Commission Chairman Dean Birch.

Eger's first exposure to communications problems came in the mid-1960s, when he was employed as a data communications specialist with Illinois Bell.

The communications attorney received his law degree from John Marshall School of Law in Chicago.

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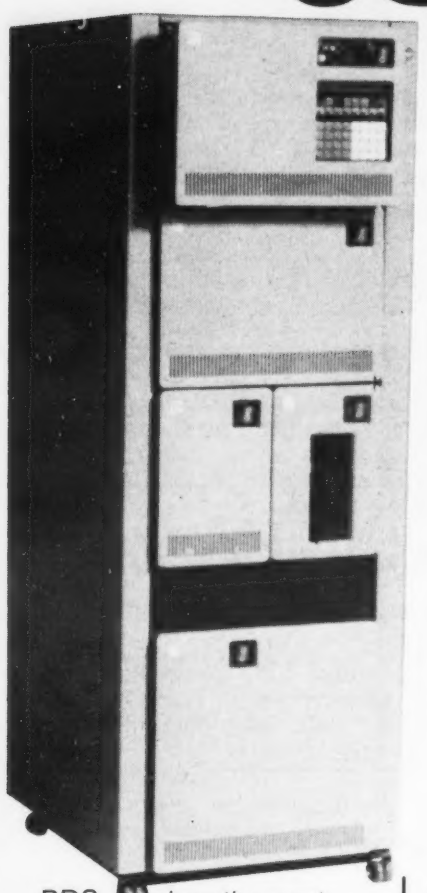

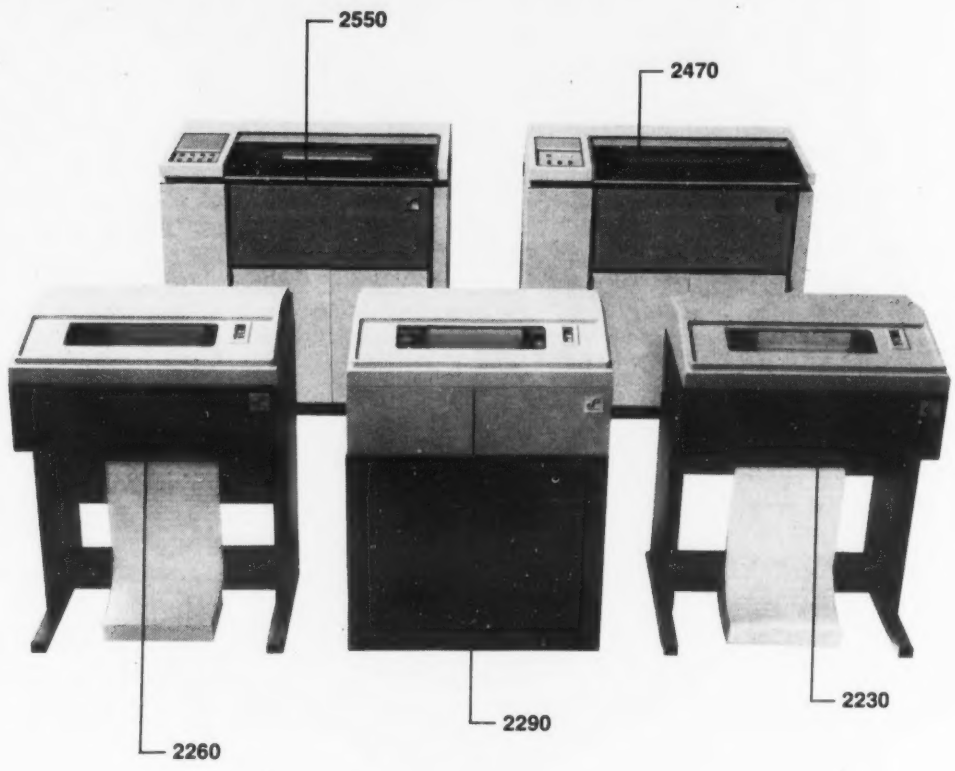

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Editorial

U.S. Will Be the Loser

In this issue, former Acting Director of the Office of Telecommunications Policy John Eger argues cogently for the development of a national policy on transnational data flow.

Yet just last week, another report said the only four members of the 35-member Subcommittee on International Data Flow of the Advisory Committee on Transnational Enterprises bothered to show up for the first meeting of that group.

The U.S., which is the largest exporter of information, has been viewed in international circles as the main stumbling block to the development of international policies in this area.

Apparently, that reputation is deserved, judging from the attendance at the first meeting of the State Department group responsible for trying to develop a U.S. position on the issue.

Eger effectively argues the reasons we need such a policy, so we won't repeat those reasons here.

The problem, however, is that few people take the issue seriously. It is time that it is treated as an important matter — perhaps the State Department or White House should focus more attention on the area. If not, the U.S. is going to be shut out of many trade opportunities and American businesses are going to be hampered in dealing with foreign subsidiaries.

The issue just will not go away, so hiding from it will solve nothing.

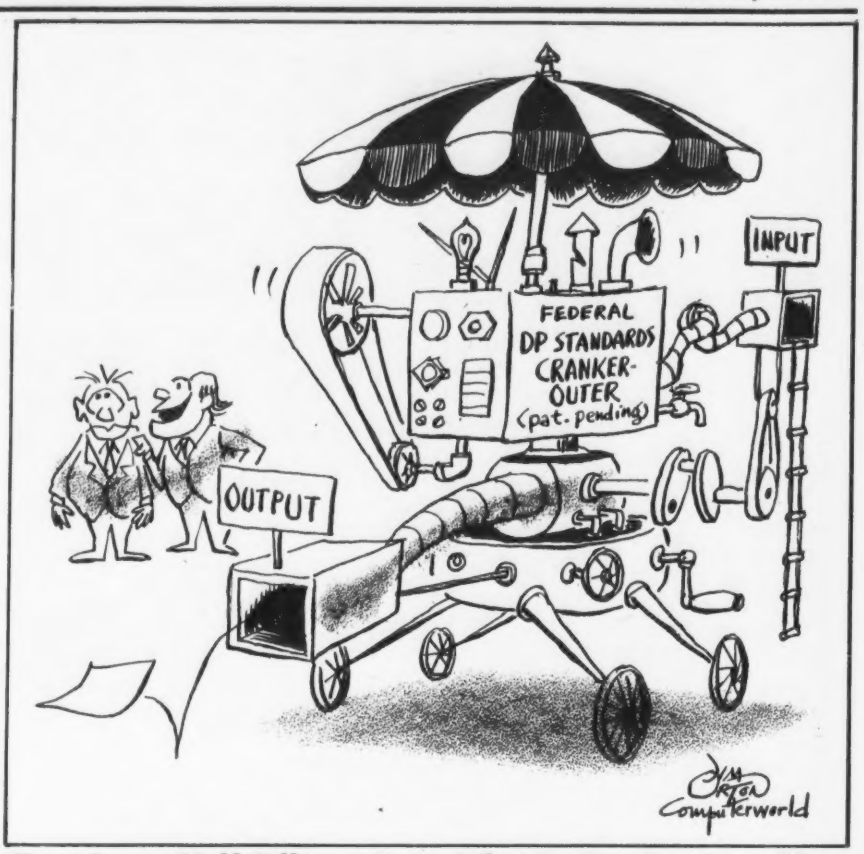
Wrong Way to Stop Abuse

Matching one computerized record with another in order to detect welfare cheats is really catching on in Washington and has now been expanded from matching just governmental records to matching records of welfare recipients with those of employees of private firms.

Clearly, no one can be against reducing welfare fraud; any savings in this area will benefit the taxpayer and the legitimate recipients of welfare. However, the practice raises concern over privacy. Should records developed for one purpose be matched with others developed for other purposes? Does the state, in the interest of efficiency, have the right to access records of private firms or individuals?

We don't think so. Primarily, we are against the practice because once started, it is hard to see where it will stop. Matching of records could lead to a national data bank by slow stages — and the people and Congress have rejected such a notion for years.

Welfare abuse should be stopped, but matching is not the way to do it.



'For a Lousy Half-Billion a Year, What Do You Expect — Mass Production?'

Data Past

Five Years Ago
Feb. 14, 1973

MONROEVILLE, Pa. — The Data Base Language Task Group of the Conference on Data Systems Languages (Codasyl) Programming Language Committee released its recommendations for the inclusion of a data base facility in Cobol. The proposal was based on the concepts and facilities described in the Codasyl data base task group report of April 1971.

— — —

NEWTONVILLE, Mass. — A search for some of the contents of the Control Data Corp. data base, compiled for use in its antitrust action against IBM, produced a picture of the gross profit margins used by IBM in manufacturing, maintenance and rental.

An analysis of the data indicated that maintenance and labor costs, as of February 1972, were being marked up by IBM approximately 300% (the users of the models 20, 1800 and 1130 getting slightly less of a markup than the users of the other 360 and 370 machines).

Eight Years Ago
Feb. 18, 1970

NEW YORK — Only about one-third of the small IBM users had signed up for IBM systems engineering (SE) services, under post-unbundling terms and most of the firms that signed the general SE contract did not plan to make much use of the services, a poll conducted by *Computerworld* indicated.

The most commonly voiced complaint by 360/20, 360/30 and 360/40 users contacted concerned the degradation of IBM services in "the new world," especially the loss of free education services.

— — —

GAITHERSBURG, Md. — IBM introduced an I/O device for the 360 that could read as well as write 35mm photographic film.

The IBM 4481 Film Reader Recorder was said to speed the transfer of illustrations, photographs and other graphics data from film to a 360. The unit could also reverse the process and record the data in its original form on film.

Letters to the Editor

Sorry, CW, It Won't Work

Regarding the editorial, "Come Now, Mr. Barr" [CW, Jan. 30], my response is, "It Won't Work, Mr. Editor."

The nature of what I said was and is that you report nonfacts, speculation and stories from unnamed "sources" about the IBM lawsuits, and when that runs out, carp at those of us who know the facts for wearying of your fantasies.

The editorial ploy to goad me into a retort by asserting that I may not know what is going on is creative — sort of — but it won't work. However, it is certainly better conceived than your usual reports on the facts.

Maybe if you would drop your coverup and reveal your "source" — if you have one — and what you or it really knows — if anything — your readers could judge for themselves who is being "cagey."

Thomas D. Barr
Cravath, Swaine & Moore
New York, N.Y.

Different Vantage Point

I can't resist commenting on the letter "Bionic Blooper" [CW, Jan. 30]. It is apparent to me that Lee Mulder must view the computer world from the vantage point of large systems.

If he had any amount of experience with carefully constructed hobby or home computers, he would readily recognize that plug-in read-only memory (ROM), programmable Prom or erasable Eprom chips can contain a significant amount of application program logic including enough to "divert funds" from a normally running package of application software.

In the case of these systems, it is usually necessary to use a screwdriver to get at the board containing the chip(s). Using a screwdriver to remove the chip(s) — well, ugh! Pocketing the chip, sure.

W.B. Helgeson
Sudbury, Mass.

More Meaningful Survey

I disagree in several respects with the new Datapro survey results on small business systems and minicomputers [CW, Jan. 30]. I guess everyone with some range of exposure goes through this game every time — "What!! An IQ3000 runs like a slug. How did it get a high rating?" or "My HAL9000 loves me, so how dare they say bad things about it?"

Some of the disagreement is the result of local service or sales support, of course. But the survey should remove most of that by averaging over a wide range.

I would put forth the premise that not all users' opinions are of equal weight. A person who is used to having a manual system on index cards would think any computer is wonderful; a person with experience in only one produce line would be prejudiced toward that line; a person with more experience would tend to give a rating that is more balanced.

A method for incorporating ratings of the raters would give some real meaning to these surveys.

Joe Celko
Atlanta, Ga.

Computerworld welcomes comments from its readers. Preference will be given to letters of 150 words or less. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

Personal Liability Creeping Up on DPers?

By Jack Stone
And Ida Mason
Special to CW

"Willful negligence!" This is the charge starting to echo around courtroom corridors which could have severe repercussions for the DP management force.

For example, the Federal Deposit Insurance Corp.(FDIC) recently made this charge in a suit against the former directors of the now defunct Hamilton National Bank of Chattanooga. The FDIC is holding them personally and collectively responsible for nearly $12 million in losses resulting from bad loans made by the bank.

Such proceedings are beginning to be widely publicized as a result of a dramatic increase in the number of bank failures. FDIC officials report that another dozen willful negligence suits are pending against bank directors and they expect that number to increase in the coming months.

There were 29 bank failures in 1975-76 compared with only 24 in the entire period from 1969-74. Further, four more banks have closed recently and 18 others are in deep trouble. If the FDIC wins these cases, many ex-bank directors may wind up paying for corporate financial losses out of their own pockets.

Thus, managers who were previously shielded from their accounts ability under commonly accepted corporate legal practices are coming under the gun in unprecendented numbers. Fines and even jail sentences may be just around the corner for many individuals who previously thought themselves immune.

And regulatory agencies are uniting to impose stiffer penalties for proven negligence: the Justice Department, the Securities and Exchange Commission and the Consumer Product Safety Commission, among others, are developing tougher regulations that are making the individual manager an increasingly attractive target for personal liability suits.

Parks Case

The famous Parks Case may be taken as a case in point. In 1975, John Parks, president of the Acme Markets Co., was held personally accountable and fined for mismanagement because he did not keep rats out of his Baltimore warehouse. In addition, drug companies are required to identify specific individuals who are responsible for quality control so that negligence charges can be pinpointed; an officer of one of these firms was said to be thinking of hiring a "vice-president in charge of going-to-jail."

Emotional tension among managers is also growing because of the darkening clouds over the legal horizon. They are bothered, for example, by sometimes ill-defined or contradictory guidelines that result when agencies rush the job of modifying guidelines as they try to impose heavier fines and other penalties for personal negligence.

Perhaps an even greater threat is that it is difficult to gauge if, when, or where the axe of liability may fall, since different agencies interpret the law and regulations in different ways, take varying amounts of time to analyze their cases and prosecute within a broad range of vigor.

The Human Connection

And as if government agencies aren't causing enough loss of sleep in the management population, it is now much easier for *individuals* to file personal liability suits in cases of alleged managerial misconduct.

It doesn't take much imagination to visualize just how all of this affects the DP manager. (Perhaps the issue should better be framed as the question, "How doesn't this affect the manager?") DPers are closely woven into the organizational fabric at all levels of the hierarchy. They are associated with management decision-making throughout the firm, be it a large multinational company, a small retail store or anything in between.

Are there cases where DP managers may be accused of personal negligence? Consider these hypothetical but realistic situations and draw your own conclusions:

A systems manager, working for a software firm, designs and installs a multi-million-dollar system that, because of an incomplete spec, doesn't work. Can he be held legally liable?

An operations supervisor allegedly mismanages an on-line facility, causing a death in a hospital's intensive care unit. Is he personally responsible?

A service bureau maintains confidential records of many customers, including personal health data, debts and liabilities, political affiliations. Security is breached and data volumes are stolen. Is the chief operating officer legally responsible?

Perhaps the day is not too far off — it may already be here — when malpractice insurance may be a way of DP life, as it may be the only practical strategy for keeping DPers out of the courtroom. But this is speculation. We do know this: Questions of how far cases of DP personal liability will go, how many DPers will be involved and what the regulatory agencies will do may prove critical to the future careers of DP managers.

Ida Mason, a professor of DP at Lehigh (Pa.) Community College, is currently on sabbatical doing research on women in management.

Letters to Stone should be addressed to him at Suite 222, 2233 Wisconsin Ave., N.W., Washington, D.C. 20007.

Duplicate Licenses a Problem in Florida

The Taylor Report
By Alan Taylor CDP

The Florida State Attorney uses drivers' license numbers to find out who is passing bad checks and the police use them to find out who has been speeding. In addition, the Florida courts use them when issuing summonses. Yet, it now turns out that there are thousands of cases of duplicate license numbers — for the sake of DP convenience in a conversion 10 years ago! And, what is more, while the dimensions of the problem have been known for years, nothing has been done about it.

It all started in 1968, when the files were automated. At the time, they were being handled manually by "old ladies," according to Randy Walford, director of the data center involved. "It was easier to convert by using the code that the old ladies were used to," he told me.

The code used a Soundex process, which brings all similar names together. (See box as to how Florida assigns the numbers.)

This becomes a problem, however, when there are millions of people being identified by precise computer matching.

Over the years, this confusion has caused problems, particularly with common names such as Jose Rodriguez. In Miami alone, there are 217 people with this name — more than three times the number of John Smiths and John Joneses combined.

One Jose Rodriguez, an auto worker in Hialeah, knew about this duplication of license numbers and the potential problems. Another man of the same name had the same license number and, despite the secret tie-breaking number concerned, kept on being brought before judges, the State Attorney and others.

While the authorities think that duplicate numbers are "no problem," neither Jose nor his relatives think so.

The climax came after Christmas. One Jose wrote bad checks totaling $293.76, and the "innocent" Jose was asked by the State Attorney's office to explain why his license number was on the back. After he explained, a warrant was put out for the other's arrest. Like the State Attorney's office, the police also used license records to trace the offender, but arrived on the doorstep of the innocent man the day after Christmas.

"I was screaming in Spanish, 'Don't take him away!" his wife remembered. Eventually, after causing confusion in the home, the police left.

The affair was written up in the local Knight-Ridder newspapoers by two reporters, Barry Bearak and Kate Wheeler. Doug Powless, a review officer for the Buraeu of Driver Improvement, reportedly said he could not change the innocent Jose's number because of the computer system. The report was reprinted in the *Houston Post* on Jan. 22 and subsequently to me by a reader.

Randy Welford told me there had been no investigation of the incident, but that he would look into it. He did and later said that he had stopped checking when he found that the Rodriguez duplicate was accidental.

He agreed with Powless that nothing could change the innocent Jose's number, although that would be a solution. He also told me there was no elected officer — except the governor himself — that I could consult to find out why thousands of duplicates were considered to be "no problem."

So that is where the Florida driver license problem stands. Perhaps there are duplicates in other states, too. And perhaps some people haven't been as lucky as innocent Jose, who at least has managed to talk himself out of everything from his insurance policy cancellation to court appearances and arrests. After all, there have been instances of police shooting people as a result of car registration errors.

So there are many questions. If you think of more, or have any comments on the situation, please let me know. Write to me c/o Computerworld, 797 Washington St., Newton, Mass. 02160.

How Numbers Are Assigned

There is a 15-position driver's license number as follows:

ANNN	**Soundex version of last name. Many names have same coding.**
NNN	**Coded version of first name. Twenty codes are given to each major letter, starting "A" at 000, "B" at 020, "C" at 040, etc. Nineteen of these are given to common groups; thus, Alice and Albert have the same code; Arthur, Anne, Ann have another code. The other names, like Alan, coded 000, 020, 040, etc.**
YY	**Year of birth.**
M/S	**Month of birth, coded 00 for January, 04 for February, etc.; Plus 50 if female.**
DD	**Date of month of birth, added to M/S to give three numerics. Thus, a man born on April 26 will be coded 120 + 26 = 146, while a woman born the same day would be 646.**
XXX	**Unpublished tie-breaker, from various sources. Currently 000 for first identical published number, 001 for second, etc. Only accessible in the computer.**

Not in Concept

Problem With MIS Lies in Implementation

Reader Commentary

By Arthur L. Slotkin
Special to CW

Yet another advocate of distributed processing has attacked the concept of centralized management information systems (MIS). Assessing the MIS currently available, Jacob Sternberg has concluded that they are plagued by "voluminous planning reports, much wasted management time, millions of dollars down the drain and eventual disillusionment of users" ["MIS Called 'Disease' of Centralized Systems," CW, Dec. 26-Jan. 2].

This is a harsh assessment, but not really an unfair one. Certainly, the experience of business with MIS has not been notably successful. Indeed, we could add a number of other disagreeable symptoms to Sternberg's list.

However, while we concur with Sternberg's assessment of current MIS, we are convinced that the problem lies in the implementation — not in the basic concept. Abandoning the obvious advantages of integrated MIS because of imperfect implementation is akin to throwing out the baby with the bathwater.

Conceptually, the advantages of an integrated MIS are unarguable. So much of any company's data base is used by several different users are to make business decisions based on the same currency of data. The interrelationships between using functions are often not obvious, and the central data base is the one assurance that every department is operating on the same data.

Better Control Inevitable

By controlling the input of data, moreover, an integrated MIS minimizes the probability of spurious data being entered. Better management control is inevitable. Equally importnat, a manager *knows* what data is available; he doesn't have to have *a priori* knowledge of what reports are being generated at the local level in all the using departments.

Thus, he can avoid generating needed reports that are largely redundant with others being used elsewhere in the company.

Despite the inherent efficiency and control advantages of centralized MIS, it is undeniably true that they have been notoriously unresponsive to the needs of the using departments. Again, I am convinced that these problems have nothing to do with the concept, only with the implementation.

The problem has not been so much that the systems analysts have not tried to work with the using departments to understand their needs. Rather, they usually have tried to understand the business too well.

Understandably, viewing MIS as a companywide resource, they have attempted to define *all* requirements and design a total system that would meet all reuqirements of all departments of the company when first implemented.

With this approach, it was not at all surprising that the systems analysts would spend two years or more trying to develop an MIS system. Not only did this approach represent a heavy investment before the system could provide any payoff, but the time lag caused problems of its own. Since the requirements of the company and its departments usually change over a period of two yers, the system often didn't meet current requirements.

Moreover, the software design typically was so rigid that making the necessary changes was an equally painful — and expensive — project.

This implementation approach, I submit, caused the problems Sternberg described. However, an integrated MIS does not rely upon this implementation approach.

We have concrete evidence to this effect, for we designed and implemented an integrated MIS for our own use at System Development Corp. By taking an entirely different implementation approach, we have preserved the advantages of an integrated system, while avoiding the classic problems.

One at a Time

While we designed the overall system structure at the outset of our development program, we did not attempt to program all business functions at once. Rather, we segregated our business functions into discrete modules and implemented them one at a time.

Development of a single module is a manageable software task that can be completed rather quickly — and can be productive quickly. Attempting to develop and program a total business system at one time would have left much more room for error and would have substantially delayed the day we could have benefited from any part of our system.

The first module we developed was our personnel module, which incorporated the functions of payroll, personnel status, stock and savings plans, pension plans, skills inventory, insurance reporting and applicant resources.

Next, we developed our finance module — accounts receivable, fixed assets and the like. This module was integrated smoothly, without disrupting operation of the personnel module, even though it shared much of the same data base.

The system is on-line with interactive capability, so our managers can immediately get the information they need without waiting for report printouts.

Since we wanted the system to be operable by business people, not programmers, we incorporated capabilities which let users modify either inputs or outputs, query the computer and modify programs. Our managers can access the system through on-line interactive or data collection terminal entries in either conversational or structured formats.

Total development of our system certainly wasn't inexpensive. We spent considerable time in developing the basic programs and in analyzing the detailed requirements to ensure that the system would be responsive. However, we started benefiting from the system when the first module was operational and each module has been useful and responsive to the using departments.

Slotkin is vice-president and general manager of corporate services at System Development Corp., Santa Monica, Calif.

Any Advice for DP Grad Looking for Job?

Reader Commentary

By Barry Starkman
Special to CW

A short time ago, I graduated from a university with a data processing degree. I assumed that I would be able to get a job as a computer programmer. I was wrong.

Basically, what I found out about the programming field is that, while there is a large demand for *experienced* programmers, there are almost no entry-level jobs available.

Or, to put it another way, you can't get a job as a programmer unless you have already had one.

When I explained this problem to a number of supposedly knowledgeable people, most gave me what I call "conventional wisdom," which can best be summarized in those immortal words: "Try banks."

In addition, five people suggested I visit an employment agency, two told me to go to my university placement center and one recommended that I move to South America.

Recently, I decided to take some of that advice. I visited my university placement center and met with a counselor. He suggested that I try banks.

He was not too keen on South America. He suggested Australia instead.

There is one problem with conventional wisdom. Most of it is hearsay. A part of it is probably accurate. But which part?

After a great deal of investigation, I am now at the point where, even though I have no answers, I at least know what questions to ask. A sample of these questions follows:

(1.) Is a beginning computer programmer more likely to find a job? If so, where?

(2.) Is there a certain geographic area or areas where an entry-level programmer is more likely to find a job? If so, where?

(3.) Is there a particular entry path which leads to a career as a programmer, as there are in such fields as law or medicine? If so, what is that path?

(4.) Did most programmers get their first jobs because of similar circumstances, or does the average programmer become one by change? If there are similar circumstances, what are they?

(5.) Are there any companies which are now offering training programs for beginning programmers? How would one find them?

(6.) Is there a particular academic credential which an individual looking for a first job as a programmer should have? If so, what is it?

(7.) The most consistently mentioned academic qualification for a career in data processing is a bachelor's degree with a major in computer science from an accredited college or university. An individual cannot hope to become a doctor without a medical school diploma or a lawyer without a law school degreee. Does the bachelor's degree in computer science have the same relationship to a programming career as degrees in law or medicine have with their respective professsions?

(8.) Many accredited colleges and universities are offering two-year degrees in computer programming. Many unaccredited schools are also offering programming degrees. Some schools teach programming by mail. Are these degrees useful? For What?

(Continued on Page 30)

Health Care Group Seeking Software

I am interested in learning how I could go about compiling a fast but exhaustive listing of all vendors of software packages for health maintenance organizations (HMO) and similar ambulatory health care programs.

"HMO" is the recent federal designation for prepaid group medical practice organizations, such as the Harvard Community Health Plan in the Boston area. There are many such operating and many more in various stages of development throughout the country.

We, for example, have had federal development support for several Years. By the time we become operational in September 1978 we will need to have installed at least some modules of a data system to maintain membership, utilization and financial files and produce a variety of mandatory reports as well as daily operations information.

Whatever assistance you could offer in providing an inventory of this vendor market would be appreciated.

Harvey Schaffler
Associate Director

Community Heath Plan of Suffolk, Inc.
Stony Brook, N.Y.

Other HMOs or vendors involved with this market can contact Schaffler through P.O. Box 778, Stony Brook, N.Y. 11790. Ed.

Letters to the Editor

Irrelevant Information

As a reader of *Computerworld* for many years, I am used to your various techniques to stimulate reader interest and stir up controversy. It is an essential feature of newspaper marketing.

However, I am shocked and dismayed at the transparent tactic in the Jan.16 issue — using Edward H. Elkind's long harangue in the leters to the editor column.

In my opinion, it was the most irrelevant item of information to appear in your paper. I hope you are overwhelmed by the huge volume of letters in protest to this most blatant attempt to cash in on calamity.

Robert R. Hamilton
Winchester, Mass.

Anyone Have Advice For Job-Seeking DP Grad?

(Continued from Page 29)

If they are not useful for anything, shouldn't the government require that warnings be issued as they are with cigarettes?

Any Answers?

These are the questions I would like to ask. If you have the answers to any or all of these questions, and proof that your answers are correct, I would like to hear from you.

I have an answering service that uses Wats lines. If you live anywhere in the continental U.S., except New York State, you can call my answering service toll-free by dialing (800) 448-4511.

In New York State, please call (800) 962-1480, which is also toll-free. These numbers can be called 24 hours a day, seven days a week.

When you call, please say that you want to leave a message for Barry Starkman. Give your name, phone number and what time you can be reached.

If at all possible, please leave a number at which you can be reached at night, when the phone rates are cheaper.

But wouldn't it be expensive for me to call people all over the country? Yes, but not as expensive as you might think. A three minute call from New York City to Los Angeles made after 8 p.m. (Los Angeles time) costs two cents more than a ride on a New York City bus.

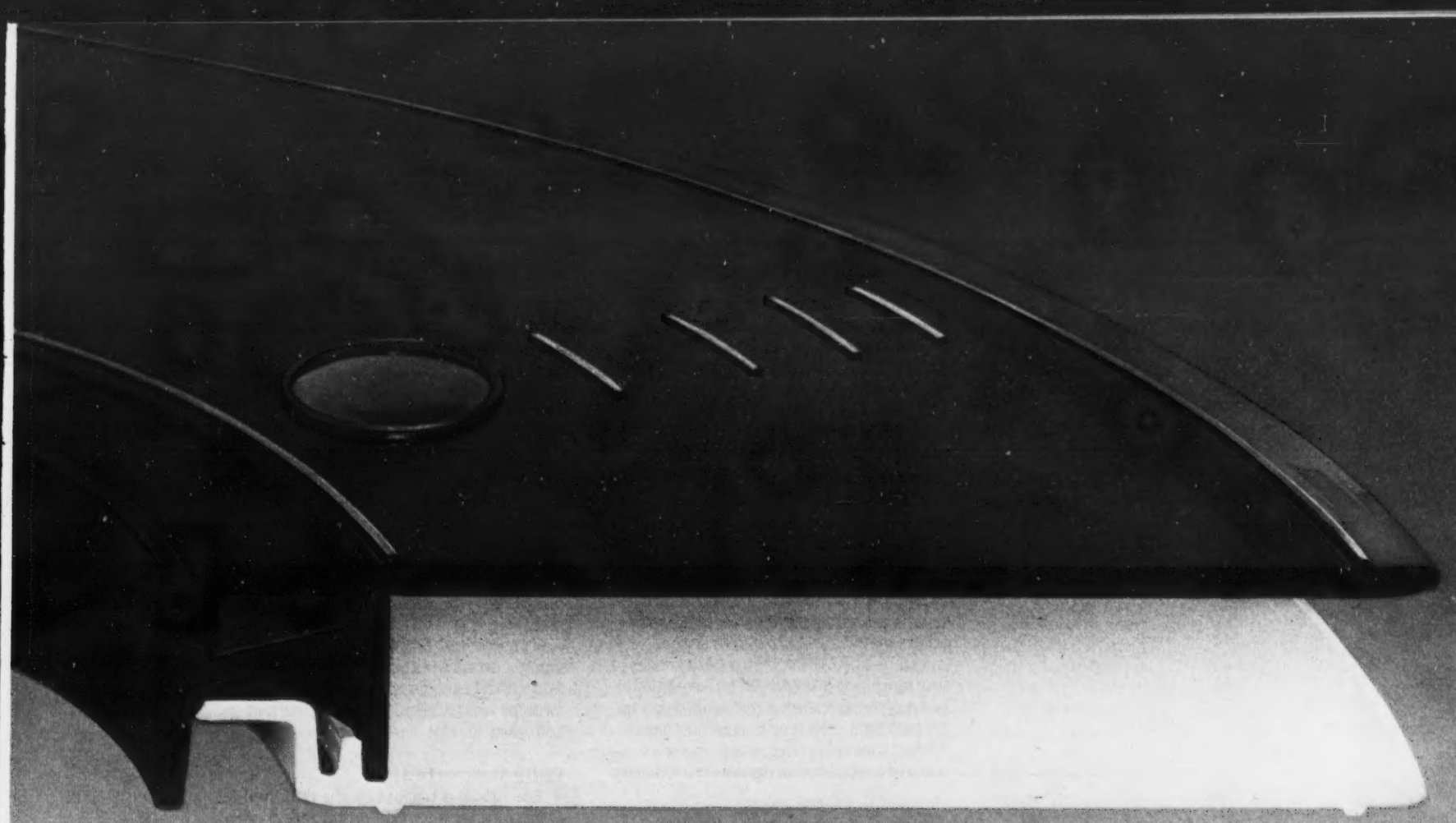
Want to Talk

If you have information on entry-level programming positions, I want to talk to you. A future article in this publication will contain whatever information I have been able to find.

If you have recently gotten your first job as a programmer, please contact me. I would like to know how you got that job.

Last, and definitely least, if you just want to give me advice, I will speak to you anyway. But if you want me to try banks, I would appreciate it if you could give me specific names and addresses.

And if you want me to travel to some distant place, please make sure that I can get there on a Greyhound bus.



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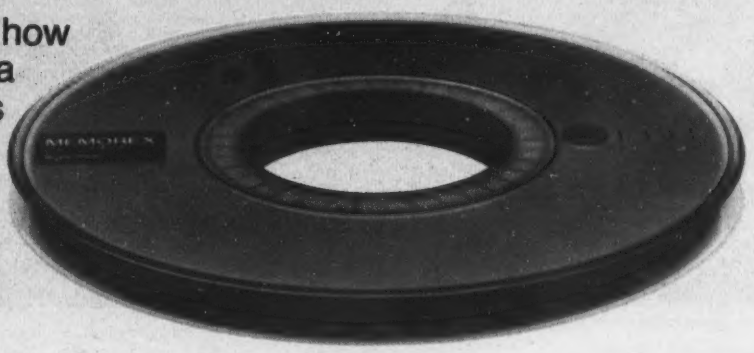

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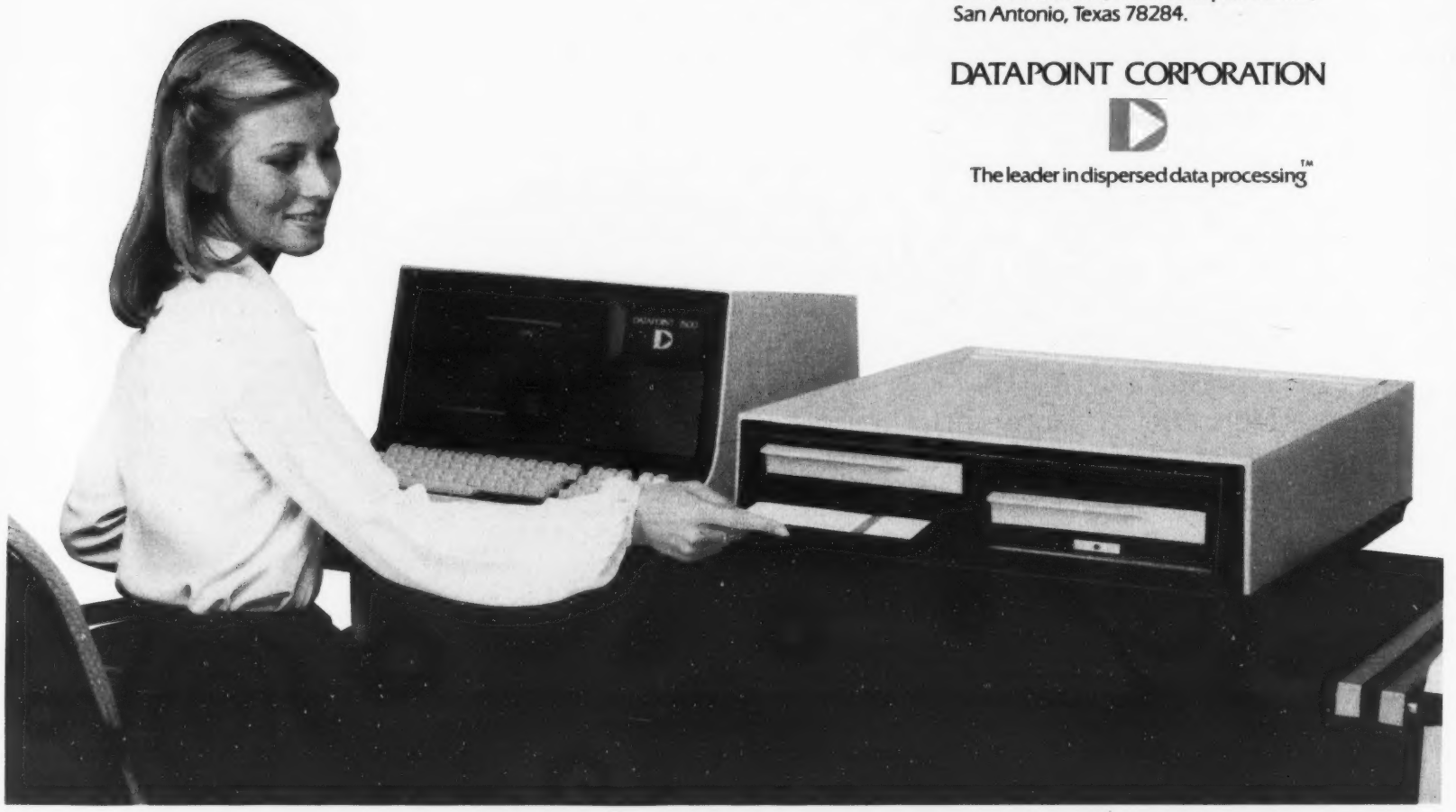

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Even With Packages

Teamwork Needed to Get Project Up

By Don Leavitt
CW Staff

LOCK HAVEN, Pa. — It's a cliche to talk about how to get a good, well-considered project "off the ground," but that phrase seems particularly apt for an implementation team here.

The step-by step efforts now under way at Piper Aircraft to get a manufacturing control system designed and operational — yes, "off the ground" — by Aug. 1 illustrates what a serious implementation may involve.

Project manager Robert Elrick and his team began the work at Thanksgiving time and he still foresees a "lot of nights" because of the "tight schedule" they have.

Much of what's in the system isn't new to him or to Piper. Material requirements planning (MRP) is the prime application, shop floor control is secondary and purchasing will follow that. The current work is needed because Piper "just outgrew the system it had in place," he said.

Elrick wasn't involved in the selection of Martin Marietta Data Systems (MMDS) — and its Modular Application Systems (MAS) — but he endorses the move. The software has the ability to handle multiple locations (Piper has four) and MMDS "has a good reputation for support, which is awfully important when you're putting in a system of this magnitude," he explained.

He doesn't anticipate a lot of customization work, however, because the software allows users to pick form a number of precoded options to handle any phase of the work.

They spent several weeks starting the end of November just setting schedules for the various phases, planning so the work could be done realistically and seeing what the team would have to put into it, he said. After that, there were two weeks of education and training for members of the project team.

The functional system design phase, half completed early this month, started with a more detailed reveiw of the MRP logic, seeing where Piper needed any custom work. "We had options, but like any installation we also found some problems we had to solve," Elrick noted.

Once those problems were solved, the project team spent a week out in the users' areas asking questions.

So now the team has been reassembled and they are considering the new user input, getting ready to refine what they've already done.

As the team leader, Elrick sees himself as a user. He said he didn't know what kind of computers Piper has — "IBM, I know, but aside from that . . . "

The six Piper staffers on the project team presumably know the company's interests. And the two MMDS members of the team bring detailed knowledge of the system to the implementation effort.

Elrick is satisfied with the software "To be perfectly frank, the basic MRP isn't really different from anyone else's but, he was quick to emphasize, "it has a few bits of logic in there that allow multiple locations to run fairly smoothly."

'Magic' Runs DEC-Based Graphics

GREENSBORO, N.C. — The Machine Aided Graphics for Illustration and Composition (Magic) software, developed by Western Electric (WE) to meet increasing demands of the Bell System for technical documentation, is now being offered to non-Bell System parties.

Magic is described as an interactive computer graphics system for preparation, editing, production and storage of diagrams and technical documentation.

The basic Magic package runs on Digital Equipment Corp. XVM minicomputers based on DEC's PDP-15, equipped with disk units, magnetic tape drives and paper tape reader/punches. Linked to this is DEC's Graphic 2 display processor.

For installation with multiple Magic workstations, a related piece of software installed in a Decsystem-10 time-sharing mainframe provides data base support and control for up to 11 of the XVM configurations.

In addition to the automation of book-quality production of line drawings and text copy with multiple fonts, Magic system advantages cited by WE include reduction of the costs of drafting, floor space and overall documentation, storage and distribution.

The terminal-level Magic is available under license for $30,000 for the first XVM and $20,000 for each additional mini. The Decsystem-10 data base/control software costs an additional $30,000.

Product distribution is handled by the Patent Licensing Manager, Western Electric, P.O. Box 25000, Greenboro, N.C. 27420.

For Data Entry

TSI Moves 'Key/Master' to CICS

NORWALK, Conn. — The Key/Master package from Turnkey Systems, Inc. (TSI) enables IBM-based data centers to support "programmerless" development of on-line data entry routines under CICS.

The logic behind this product was developed — and is still available — as part of Turnkey's own teleprocessing monitor, Task/Master, a spokesman said.

The package is said to support interactive definitions of data formats and editing criteria, allowing nonprogrammers to design and test IBM 3270 display formats at the terminals and to begin to use them immediately.

Many data entry applications can be implemented with no involvement by a CICS-trained programmer, TSI claimed. For others, Key/Master provides program exits for the addition of user-written logic, the spokesman added.

The software includes a data base for storing entered data, and utilities for extracting and reformatting the data later.

New Displays

Key/Master's Format Definition Language allows new display formats to be created in minutes, from a terminal, he claimed. With high-level commands, a variety of data editing and field manipulation operations are available.

These include arithmetic operations, field generation, automatic duplication, range tests, table lookup and extraction, he said, adding that check digit calculation as well as alpha and numeric tests are also possible with the software.

Users can lease the package for $295/mo or purchase it for $12,000, TSI said from 111 East Ave., Norwalk, Conn. 06851.

'Universal' Basic

Compiler Serves Micro Range

LOS ANGELES — A "universal" Basic compiler that produces code which can run on Intel 8080 and 8085, Motorola 6800 and Zilog Z-80 microprocessors is now available from Futuredata Computer Corp.

The package includes a high-level debugger, a spokesman noted.

The compiler eliminates the need to rewrite programs when switching from one microprocessor to another; in addition to the four micros already supported, versions of the compiler will be generated to support other processors as demand indicates, he said.

All standard Basic statements are included as well as string variables, array variables, bit functions, PEEK/-POKE for write/read to direct memory addresses and INP/-OUT for moving data from and to I/O ports.

The debugger allows the user to set and clear breakpoints with Basic statement numbers and, once the execution has stopped, to display variables in memory using the Basic variable name, he said.

Futuredata Basic has the option of outputting an Assembly language source code of the compiled program to an editor file. Each Basic statement becomes a comment in the assembly listing; this allows the user to optimize sections of the program by editing the Assembly language, the company said.

The compilers run in systems with at least 32K bytes of memory and are available for any of Futuredata's disk-based Microsystems which include a microprocessor, CRT, 53-key Ascii keyboard, peripherals, operating software and a set of manuals.

The compilers cost $300 each, Futuredata said from 11205 S. LaCienega Blvd., Los Angeles, Calif. 90045.

PDS Used for JCL

SACRAMENTO, Calif. — A utility package that enables IBM OS and OS/VS users to create and execute their own JCL procedure libraries from partitioned data sets (PDS), Easy Rider is now available from Software Module Marketing (SMM).

The primary benefit to be gained with this package, according to SMM, is the protection it provides against SYS1 crashes brought on by typical JCL errors. Since Easy Reader checks procedures on the PDS before committing them to the job stream, disasters are averted, a spokesman explained.

Developed by Subsystems, Inc. of San Jose, Calif., the utility costs $3,000 for U.S. and Canadian installations and $4,000 in all other countries.

SMM is in the Crocker Bank Building, Penthouse, 1007 Seventh St., Sacramento, Calif. 95814.

SEL 32 Cobol Introduced

FORT LAUDERDALE, Fla. — Systems Engineering Laboratories, Inc. (SEL) has introduced a Cobol compiler, the multiprogramming environment provided by the company's 32-bit SEL 32 minicomputers.

The software will be available for demonstration and benchmarking in April, with delivery 30 days later, a spokesman said.

The compiler was designed to meet the ANS X3.23 1974 and Federal Information Processing Standard 21-1 specifications.

The purpose of introducing Cobol is to enable SEL 32 users to enhance their software capabilities, but SEL does not plan to pursue the business data processing market, he stated.

SEL is at 6901 W. Sunrise Blvd., Fort Lauderdale, Fla. 33313.

EPA Has Basic for Motorola User

SAN DIEGO — The EPA Compiler Basic package, now available from Electronic Product Associates, Inc. (EPA), is said to help Motorola 6800 microcomputer users build business applications, perform heavy computations or control processes.

The business-oriented user is provided decimal arithmetic for amounts up to $100 million, including formatted output, string processing and multiple disk file I/O. The compiler also supports the use of long — presumably meaningful — names, a spokesman added.

Software-based floating-point logic supports the user with heavy computational needs. So does the creation of compiled, rather than interpreted, code and the system's integer optimization on aritmetic operations, he asserted.

Instruction set extensions include PEEK/POKE for writing/reading to specific memory locations and I/O commands for specific ports recognize the needs of the process control programmer, he said, noting that this user would also benefit from the floating-point software.

Generated by the compiler, code for read-only memory (ROM) can be toated, placed in the user's microprocessor and forgotten, the spokesman continued.

Program generation for the EPA Compiler Basic is done using whatever text-processing system is available, he said. The compiler processes the text and produces an immediate Assembler-level source file, which then becomes input to the EPA Assembler.

The EPA Compiler Basic costs $330 and is available from stock, the company said from 1157 Vega St., San Diego, Calif. 92110.

On-Line Bank Logic Offered by Vendor Trio

• *Bills Paid With 'ABPS'*

WHITE PLAINS, N.Y. — Utilizing a pair of Installed User Programs now available from IBM, financial institutions with 370s and System/7 CPUs can manage customer account transfers, including bill payments, triggered by calls from almost any phone.

Under this Automated Bill Payment System (ABPS), customers designate in advance those merchants and services they expect to pay through this capability. Then when they want to make the actual payments, they can call in the payee number and the amount to be paid.

The financial institution records the individual requests and daily generates a single check covering all payments and a tally sheet detailing which customers and amounts are included.

When the customer calls in, the transaction is routed to a service clerk at a 3270 CRT station, who keys in each request made by the customer and advises the caller of any problems.

Customer calls from Touch-Tone phones can, however, be handled directly by the system through the System/7 front-ending the 370 mainframe. Software in the System/7 monitors the accuracy and acceptability of the caller's requests, calling for resubmission of those that fail the edit checks or transferring the call to the 3270 operator if more customer contact is required.

In addition to providing the vendors with lists of whose payments are in the collective check, ABPS also creates monthly descriptive statements for each customer showing what vendors, and what account at each vendor, has been paid during the reporting period.

ABPS operates under CICS/VS and DOS/VS Release 34. The basic software (cataloged as program 5796-ANX) requires 256K minimum memory and costs $1,425/mo for 12 months. The System/7 interface program (5796-NLZ) requires 24K memory and an audio response capability. This software costs $450/mo for 12 months.

• *SSI 'Teller' Handles Calls*

ATLANTA — Although designed to interface with Stockholder Systems, Inc.'s (SSI) Paperless Entry Processing (PEP) software, the company's PEP Telephone Teller program package will also work with other automated clearinghouse systems, a spokesman said.

Supporting telephone bill paying and other electronic funds transfers, the Teller accepts value-dated consumer payments or transfers entered on rotary or Touch-Tone telephones or mailed into the financial institution. The software produces vendor payments either electronically or by check, the spokesman noted.

In common with other, similar systems, Teller handles the Touch-Tone-based calls directly while those coming from rotary equipment are switched to a clerk at a CRT, who can enter the transactions, or to a recording device, which will be transcribed — and the transactions entered — periodically.

Customer Statements

The system is capable of producing daily or cycled accounts receivables tapes in vendor-defined formats and customer statements sequenced by customer-defined budget codes. It can provide same-day or next-day vendor credit and produce positive funds verification prior to vendor payments, the spokesman added.

The system accepts customer-assigned vendor and personal identification numbers and can generate customer turnaround documents for customer payment instructions to be entered through the mails, he said.

The system is based on IBM's OS/VS environment and runs in interactive or batch mode. Interactive work is keyed to the availability of an audio response unit, SSI said.

The basic Teller costs $30,000 including batch and video support; the audio subsystem costs an additional $5,000.

SSI can be reached through P.O. Box 41321, Atlanta, Ga. 30331.

• *'TCS' Ties to IBM 3600, Others*

OAK BROOK, Ill. — The Terminal Control System (TCS) software from The Weiland Computer Group was designed to support mini-based bank teller systems by executing demand and savings transactions, including passbook maintenance, in a real-time environment with operational, balancing and audit controls.

Described as combining the advantages of video, passbook and commercial terminals, TCS produces both CRT screen displays and printed reports.

All debit and credit activity is monitored continuously and monetary control features are said to insure that any out-of-balance conditions are flagged.

The software functions with a number of terminal systems such as the IBM 3600, Bunker Ramo Corp. BCS90 and NCR Corp. MTS; it can be modified to support others, a spokesman added.

TCS itself resides in an IBM 360 or 370 and runs under DOS or DOS/VS. The package has a base cost in the $10,000 range, but actual cost is very much installation-dependent, he said, noting that machine configuration, workload and volume of transactions must all be taken into consideration.

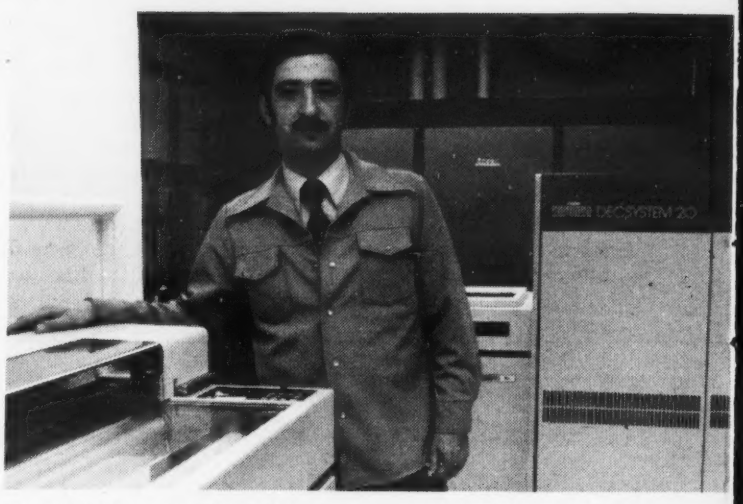
The Weiland Group is at 1515 W. 22nd St., Oak Brook, Ill. 60521.

INTERACTIVE USER REPORTS

"Growth without growing pains."

Expandability. "Computer programs developed in support of U.S. Navy combat systems projects include a comprehensive data reduction and analysis system and dynamic system simulations. A powerful, flexible and easily expanded computer was required to accomplish these computer programming tasks.

"We selected a DECSYSTEM 2040 with 128K words of computer memory and 40 million words of disk storage and quickly expanded to 256K words and 80 million words of disk storage.



R. Micklas, Project Manager, ADAR System, RCA Corporation Missile and Surface Radar, Moorestown, New Jersey

"Our experiences show that growth doesn't have to be accompanied by growing pains; no software to re-write, no obsolete hardware to replace.

"The people here are really impressed by the maturity and scope of the 20's Operating System and high level languages. For us it has been a superior, cost effective system."

Software. "Information Consultants, Inc., ICI, is a computer service and consulting firm specializing in time-sharing, primarily for the Federal Government.

"When we selected our computer system last year, our customers' requirements were important criteria. To satisfy those needs, our interactive system had to offer a variety of user-oriented languages. It had to be compatible with other manufacturers' equipment. And it had to operate in a secure environment with high reliability. The DECSYSTEM-20 met all of these requirements and then some.

"Compatibility is especially important in our case. ICI develops proprietary software—like ADMIT, a financial modeling, budgeting package. This software is developed on the DECSYSTEM-20 and is implemented on other

Merle Garvis, President, Information Consultants, Inc., Washington, D.C.

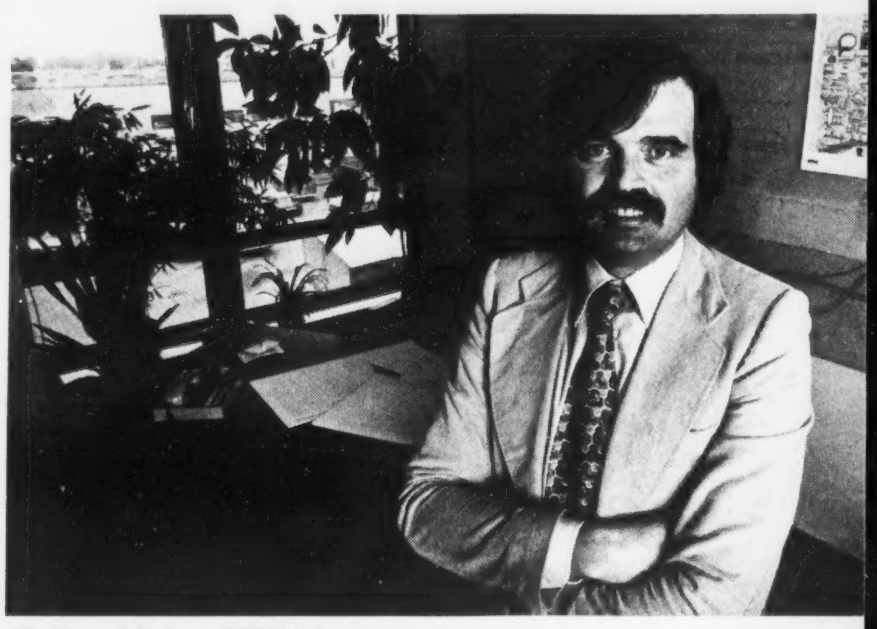
digital
LARGE COMPUTER GROUP

manufacturers' hardware.

"Finally, we had to be sure that our future needs would be met. We determined that the DECSYSTEM-20 represents the state-of-the-art in interactive computing today and has the growth potential we require."

Productivity. "At Dorsch Consult, we were faced with an extremely sensitive problem. All our programs were running on a Univac operating system and obviously our programmers were comfortable with it. But, because we had to share the Univac with other customers, turn-around time was increasing and we needed more productivity.

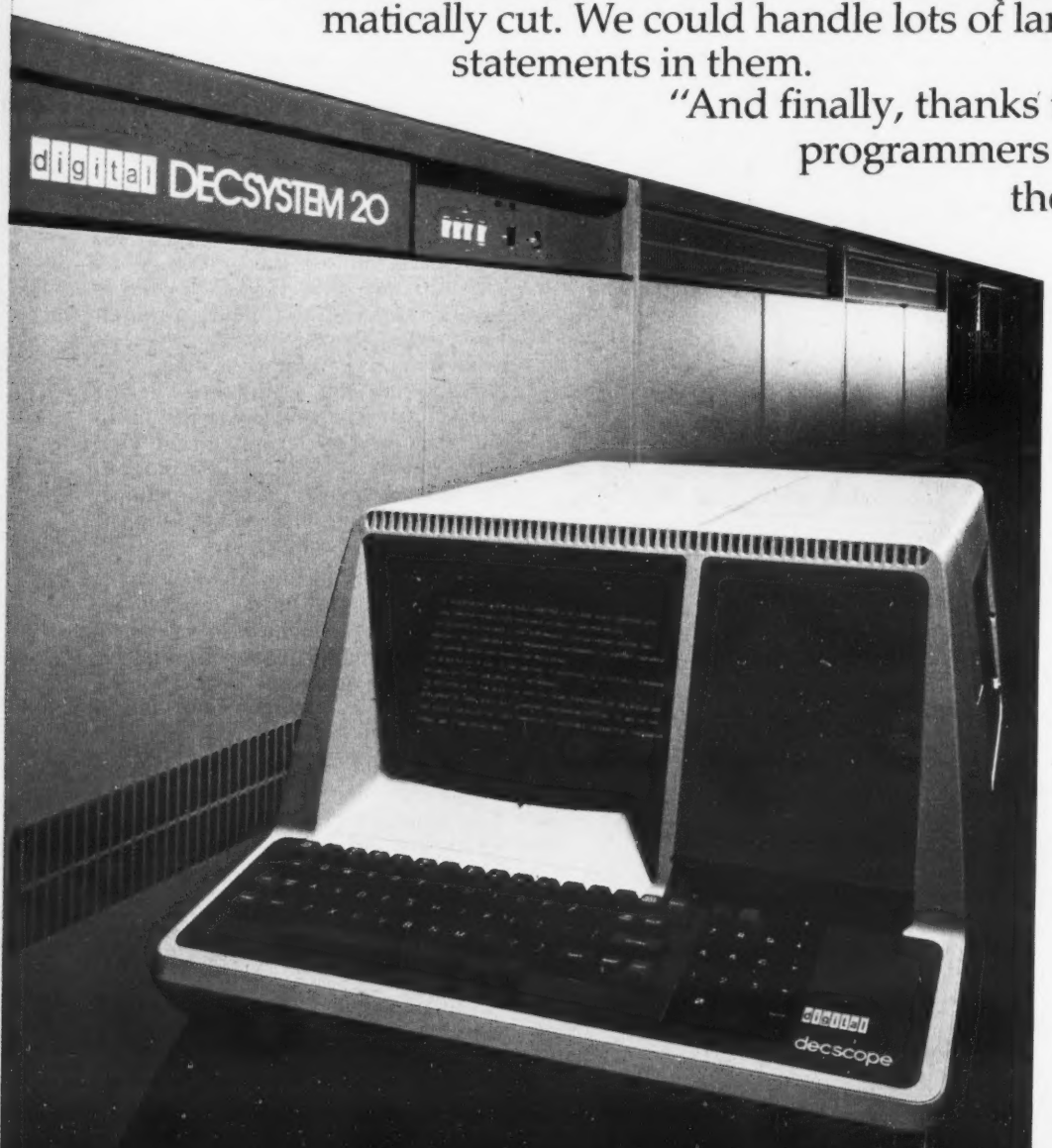
"In our search for more computer power, we became tremendously enthusiastic with the speed and capacity of the interactive DECSYSTEM-20.



D. Kornblicher, EDP Manager
Dorsch Consult, Munich, West Germany

"Once we had installed one, we were truly amazed. Turn-around time was dramatically cut. We could handle lots of large programs—some with up to 50,000 statements in them.

"And finally, thanks to the TOPS-20 operating system, our programmers had very little trouble switching to the new system."



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Seattle Institution Banks on Modeling System

Special to CW

SEATTLE — A time-sharing computer model for financial management has been developed by Rainier National Bank to calculate and analyze profit potential in any anticipated economic environment.

Rainier Financial Management Model (RFMM) analyzes and reports operating results, produces trends and compares fund levels between current and prior years, according to James Vatn, assistant vice-president.

"The key attributes of the system are its user control, flexibility, variety of reporting formats and interaction of the data base through time-sharing terminals," he said.

Written in a data base handling and reporting language provided by Tymshare, Inc., the RFMM was designed to produce results quickly through terminals connected with the remote computing service vendor's facilities in Cupertino, Calif.

"The model evolved out of a request by our asset and liability committee for a system to prepare detailed forecasts speedily. Reports from our time-consulting manual forecasts were often late," Vatn explained. "Having the model enables our senior management to test 'what-if' scenarios on paper before making an investment in the actual marketplace."

Continuous Use Since '74

Rainier began developing the model in 1974 and has used it continuously since then. The bank recently made the program available to other banks.

The model, which Vatn has priced at $15,000, or roughly one-third the usual cost of such a forecast and reporting system, is relatively simple to use. The time-sharing connection involves only a local telephone call and access is by means of typewriter-like terminals.

A system of passwords protects data base security.

Many reports can be initiated by clerical staff, untrained in the use of computers, since the system is designed to assist authorized users by prompting commands, More sophisticated users and managers can specify special report formats or plots and can generate nonstandard or one-time reports using the data base language.

The model was designed for Rainier's own use, but adapts to any size bank.

The data base parameters are controlled by bank management at the time the data base is built. To construct the data base, a bank spells out the account categories to be used in analyses and supplies the information that will be included in the base. User experience determines which forecasting formulas will be established.

Based on data accumulated in the data base, the model then provides access to experience history, recent operating results, budget and forecasts in the form appropriate to a particular analysis.

Model's Functions

The RFMM has four major segments: a forecast module, a reporting module, a data base structuring and handling module and the plotting package. All are included in the program.

Once the data base is constructed, bank management can obtain the information needed to forecast results of a plan, monitor progress, control costs and raise and invest funds.

For each of the numerous kinds of loan accounts or sources of income, the model prepares reports for any specified period — month, quarter, year, biennium. It reports rates, margins, return on assets, return on equity and changes in rates for each period.

Each report presents dóllar and poercentage differences between forecast, actual performance and budgeted levels by account on a monthly, quarterly or annual basis.

The model can determine income changes resulting from variations in volume, rate, balance sheet mix and accrual of loans. It can also determine the effect of "what if" alternatives in investment policy, fund sources, interest rates, special marketing strategies and aggregate cost control policies.

To assist senior management, the RFMM simplifies the process of reviewing and controlling such items as margins, rate spread, return on assets and return on equity levels.

Drawing from the data base, bank management can determine the effects of changing rate environments on the balance sheet mix of investment. Data can also be used to monitor progress toward achieving policies previously set in terms of rate level, portfolio mix and volume of activity.

The primary focus of the model is on forecasting. The model reports and analyzes the combined effects of expected changes in account types. The program's analytical tools provide significant information and insight during the forecast process.

Human judgment comes into play in directing what is to be forecast and confirming whether the prediction has been fulfilled.

The mathematical approaches to forecasting available in the model are numerous. They include simple moving averages, exponential smoothing of curves, linear multiple regression, trend fitting, historical seasonal variation (based on a routing developed by the U.S. Census Bureau), and the sophisticated Box-Jenkin method for time-series-related data using probabilistic structures.

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Manufacturer Makes Series of APT Decisions

By Bob Altom
Special to CW

Halliburton Services is the root organization of the Halliburton Company which employs over 83,000 people worldwide and manufactures equipment for the petroleum industry, railroads, construction and computerized graphics.

Located in Duncan, Okla., Halliburton Services has 45 of the company's approximately 200 pieces of numerical control equipment. It is a world leader in assisting petroleum and other energy-producing companies from initial exploration through production and maintenance.

A firm this large simply couldn't do without computer-assisted programming and expect to keep its leadership role in the industry.

Our experiences and growth in computer-assisted programming are rather unique in that we did not commit to one language, but went with several until we found one that suited our needs. We gave each language a fair chance. It was not until we had outgrown a langauge that we made a change. (It should be noted, however, that each change was economical on a cost per tape basis.)

Over 10 years ago, Halliburton Services had a Sunstrand Omnimill. With that machine tool came the Split language in Fortran source.

Even though we didn't know much about computer assist programming, we did know it had to be an advantage over what we had been doing.

I got with some people from our DP department and we began programming using Split on our IBM 360.

Needless to say, things were a little primitive at first.

We had to run back and forth to process the tapes and it was slow going, but the programming — the ability to define points and to repeat point patterns — was a definite advantage in part programming.

We had to modify Split after we purchased a Cincinnati CIM-X Changer, since the Split processor didn't output tapes that would run that machine. I wrote a Split-type processor using the Split vocabulary words for input and that worked quite well.

Halliburton now had two machine tools using Split.

In 1969, General Electric timesharing came to Halliburton Services. One of its packages was the Remapt programming language. Remapt was a big advantage in that it had more geometric definition capability than Split. It also had continuous part programming for two-axis and two-and-a-half axis machine tools. Remapt was used to program American and Monarch lathes.

However, we had obtained a third lathe — a J&L NCTL with a modified Bunker-Ramo controller — and could never get the parameter file worked out for it. It was the modified controller that was creating the problem.

As Halliburton Services continued to grow, we obtained a fourth lathe. This time it was a Warner Swasey SC-25 with a modified GE 100S controller.

Again, because it had a two out of a four-axis merging capability, the postprocessor in Remapt was unable to merge those axes satisfactorily.

We went on to try Adapt Plus in 1970. Not long after that, we were going with MDSI's Compact II.

By this time, we had four lathes we could program with Compact II and two machining centers that were still being programmed with Split.

As we developed our programming skills and as our engineering department began to send us more and more complex parts, we ran into trouble. Compact II language in a multi-axis situation wasn't satisfactory.

What we wanted and needed was one language that would work for all of our machine from two axis through four and five axis contouring.

Finally, a technical representative from MDSI told us that for our programming problems, we needed APT.

I began looking at various APT systems. I also went to an APT class held by University Computing Co. (UCC).

In 1971, we decided on UCC's APT system for our IBM 370 and went remote batch through a Cope terminal to UCC's Univac 1109s in Dallas.

Future Needs Satisfied

By going to APT with its geometric capability, each machine tool was just a postprocessor requirement and not a new language requirement. Therefore, APT would satisfy our programming needs for the future.

Also, UCC's APT seemed to offer more programming flexibility and capability than any of the other systems we looked at.

At this point, our in-plant computer power was insufficient to install a good APT system, so we continued as a remote batch user until early 1972.

UCC offered us, in addition to its APT system, its numerical control experts to work with us. They worked with me, in particular, to teach me what I needed to know about APT, the postprocessor and just how the system as a whole worked.

Having this information gave us the ability to work with UCC as a remote batch customer and also enabled us to plan to buy the system and go in-house.

UCC's specialists took the IBM APT system (360 APT) and put in their enhancements such as LATHSQ, THRDSQ and UTURN. These enhancements made our lathe people

(Continued on Page 59)

Upgrades in NC Machines Handled by APT Decisions

(Continued from Page 58)

happy. They just could not use any APT system that didn't have LATHSQ after having operated with it for a year.

The problems we had during this installation amounted to only the problems one would expect from a software purchase when it is tailored to an individual company's needs.

A crucial decision we made was that our language processor (APT) must be able to produce a standard CLFILE. This meant we could either purchase or create our own postprocessors.

We did purchase an initial five postprocessors along with the APT enhancements from UCC since it had debugged them on the Univac 1108. They just copies the postprocessors over for an IBM machine.

Postprocessor Problems

But there can be problems when you purchase postprocessors. The machine tools may arrive before the postprocessor is ready. Or you can have difficulty locating sources who have the time to write the postprocessor. Then there's always the problem each time of justifying the postprocessor to go with the machine tool, since a different postprocessor must be written for each machine tool and control.

However, since we had the resources and knew the capabilities of our machines, we decided to produce the next 65 postprocessors in-house at a considerable savings.

Installation 'Fairly Easy'

When we decided to go in-house in 1972, the installation was fairly easy. I had four postprocessors written from the time we installed in November 1972 to the end of January 1973.

By going in-house, we felt we could develop some modifications and improvements of our own and keep them as our competitive edge.

It's not an easy decision to go in-house and there are a great many things in the costing of one language against another language that you have to dig out to see just how much you will be paying.

In the second half of 1977, Halliburton Services decided that additional numerical control capabilities would be desirable. We chose once again to go to UCC and license its latest product, UCC-APT, a relatvely new APT processor avaiable on both large mainframe computers and Digital Equipment Corp. minicomputers.

UCC Support Tops

The support and training of our people has been excellent. UCC sent one of its analysts to help with the installation and to make modifications to the package.

Here at Halliburton Services, besides the IBM 370/158s we are using for the UCC-APT package, we also have a PDP-11/34 minicomputer that we use as a backup.

We have the best of both worlds. We've got the big IBM, but if we're in a hurry and don't want to go through job queues or should our data link be unavailable, we can go to the minicomputer to process APT.

Halliburton Services is a constantly growing company in a rapidly growing area of industry.

Without computer assist programming and without APT in particular, we would have never met programming demands without huge staff increases.

Although there are problems and difficulties going in-house and implementing software packages, justification was always necessitated by future needs.

Implementation was always as expected — a few problems, not unanticipated, but good training and support solved them.

Alton is supervisor, software analysis, for Haliburton Services, Duncan, Okla.

Cybernet Adds Packages

MINNEAPOLIS — Two interactive packages — one for graphics work, the other for report generation — are available for business-oriented users on the Cybernet remote computing service of Control Data Corp.

Plotpac, the graphics facility, is said to support the production of time plots, bar charts and scatter diagrams on ordinary time-sharing terminals, while IPS Report Writer is described as an easy-to-use program for creating business reports.

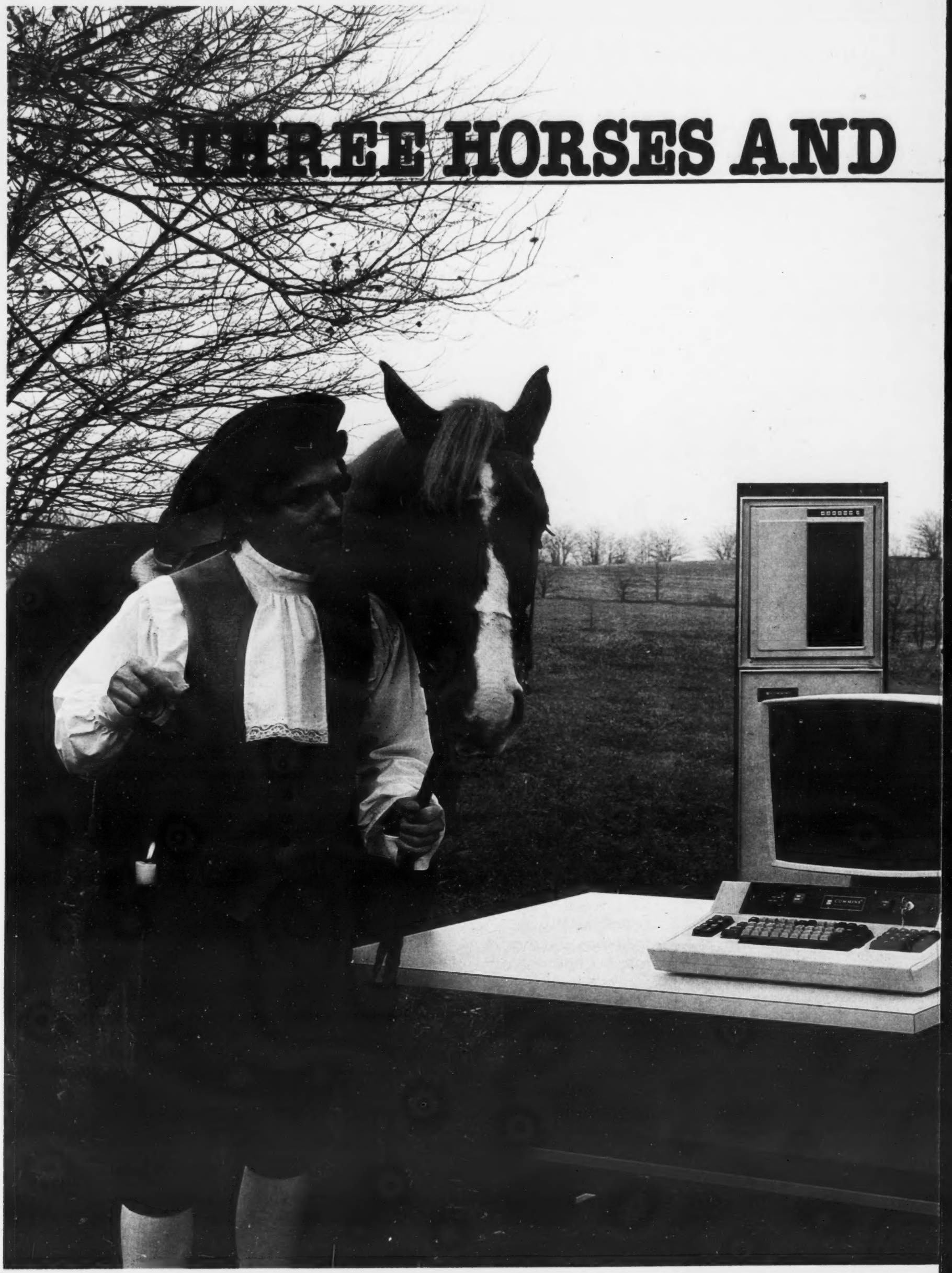
Controlled by a set of commands, Plotpac lets the nonprogrammer control the format, labeling and placement of the graphic output, a CDC spokesman explained. Data to be displayed can be entered directly from a terminal or extracted from the output of the Cybernet Interactive financial planning system (IFPS), he said.

IPS Report Writer is a data management product, the spokesman continued. It delivers "a wide range of reporting capabilities" to the user.

The commands are flexible enough so the user can set up "what if" and "look up" procedures. The user-created strings of commands can be stored and retrieved for reuse, according to CDC.

Additional information about these packages is available from the appropriate product manager, Control Data Corp., Box 0, Minneapolis, Minn. 55440.

THREE HORSES AND



A GOOD NIGHT'S SLEEP.

That's what Cummins Distributed Processing Systems would have saved me that dark, brisk night in April, 1775. With the Cummins technology that's available to you today, independence would have been achieved much sooner. That's for certain.

Cummins Key/disk and KeyScan® Multimedia Systems are designed to meet the needs of business management. Whether in a centralized or distributed environment, these systems can be configured to meet your data processing requirements in the most efficient, cost effective manner.

In my day, we'd have had a Series 5400 as our host system in Boston, Series 4400 Systems in all major colonial centers and Series 2400 Systems or remote terminals in outlying towns and villages.

Keep in mind that Cummins Systems can be configured with MICR, OCR, punch card and OMR reader-sorters as well as CRT/keystations. No other systems offer such data entry flexibility. So as your needs change, your Cummins System can be upgraded simply and economically.

State-of-the-art hardware. Comprehensive, easy to use software. Communications. Reliable, user-oriented data processing power. So don't wait 203 years to realize what you might have done for your company. Take a close look at the Cummins family of distributed processing systems. Do it today and make history with Cummins.

Write our Corporate Headquarters for more information.

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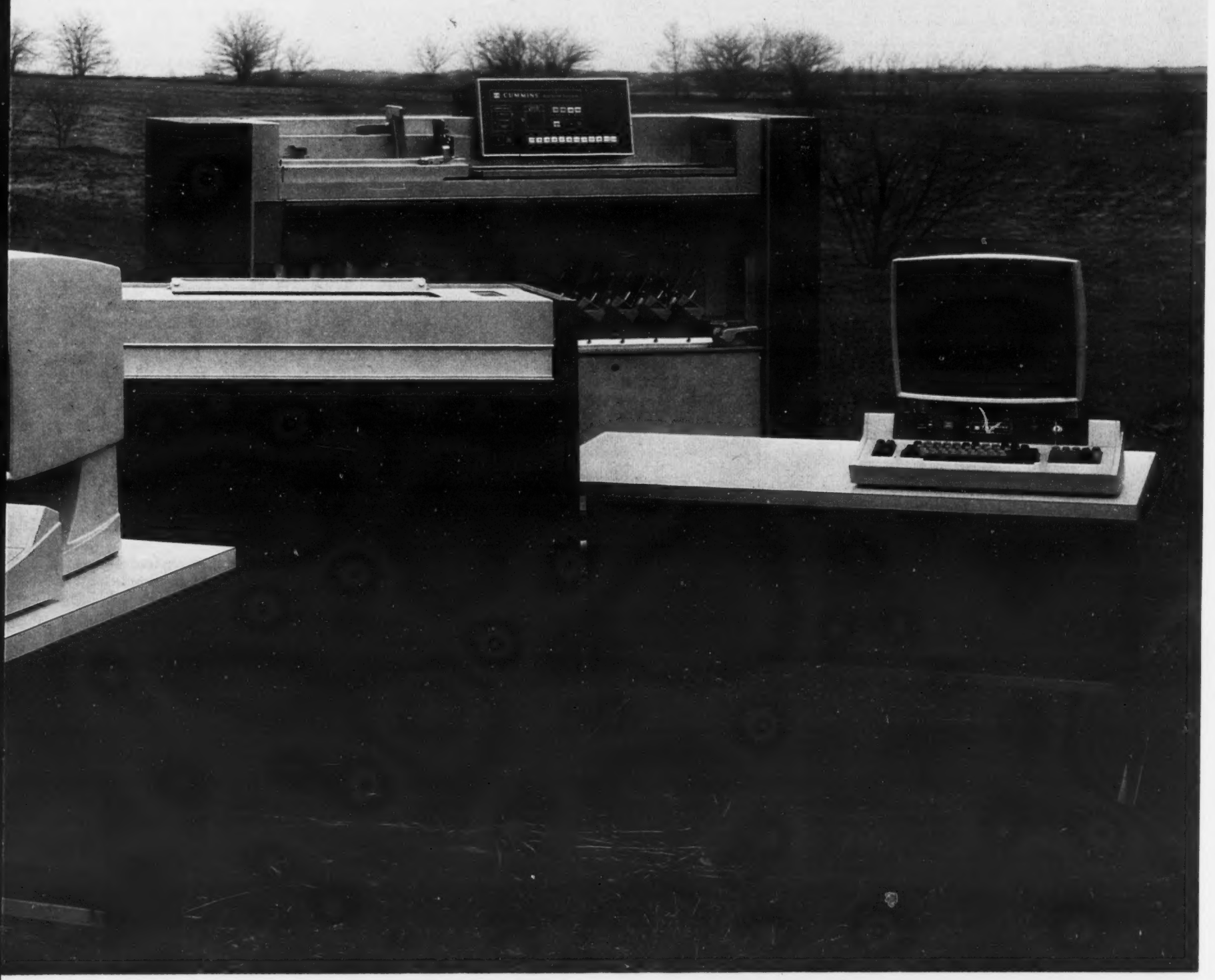
Data Systems Division
800 Waukegan Road
Glenview, IL 60025·312/724-8000



'Qedit' Aids HP-3000 Sites

DELTA, B.C. — A fast program editor for the Hewlett Packard Co. HP 3000, Qedit speeds on-line programming while "dramatically reducing" system load, according to the vendor, Robelle Consulting Ltd.

Since the Qedit workfile can be directly compiled, a spokesman explained, there is no need to copy to and from a separate source file every time the program is compiled.

Qedit is tailored for programmers, he said, citing as an example the fact that once the editor is notified of the language of a source program, it performs "smart" searches, selecting only those occurrences of a string where it is a valid identifier in context.

Qedit costs $100/mo or $960/year, including maintenance, where the spokesman noted from 130-5421 10th Ave., Delta, B.C. V4M 3T9, Canada.

APL Packages Handle Ledger

NEW YORK — Installations with APL-oriented systems, including IBM's 5100 or 5110 desktop computers, can run their accounts payable work with a pair of programs from APL Systems, Inc., according to a spokeswoman.

Developed by Think, Inc., the Accounts Payable Ledgers package (AM52) allows a business to maintain records of all accounts payable. Although sold separately, the Accounts Payable Checkwriter package (AM53) uses files generated by AM52 for operation.

The ledger package is said to create a permanent audit trail of all payments against an individual invoice. It also generates a number of managerial and operational reports, as needed, the spokeswoman added.

These include vendor history, lists of open invoices, purchase activity in a given period and aging of accounts. Cost center disbursements using the accrual method and account number disbursements on a cash basis are also reported, she said.

The package also provides the user with information on cash requirements, she added.

The checkwriter package allows an organization to control and selectively produce checks from its accounts payable files.

The ledgers package costs $1,500; the checkwriter, $1,000.

APL Systems, Inc. is at 310 E. 46th St., New York, N.Y. 10017.

Courses to Teach Tech Reading, Writing Skills

NEW YORK — The American Management Associations present many seminars and workshops, including a broad spectrum on DP topics, but a pair of sessions, one this week, really get down to basics.

Described as a hands-on skill-building workshop, "Improved Technical Reading Skills of the DP Professional" (Course 6540J) will be held at the group's headquarters here Feb. 15-17, Wednesday through Friday of this week. Next month, Mar. 8-10, "Technical Writing for the DP Professional" (Course 6545J) will be presented at the organization's center in Chicago.

The reading course is for DP professionals who must process difficult, in-depth technical material, and then make decisions, judgments and analyses based on the material, a spokesman said.

The writing course is for DPers who must produce clear, concise and accurate technical documents. It will give students practice and guidance in using "effective, straightforward, concise writing techniques."

As part of the writing course, each student is expected to bring a sample of his own work to class.

Registration for either course is $425 for American Management Associations members, $490 for nonmembers, the spokesman said from 135 W. 50th St., New York, N.Y. 10020.

Takes Corrective Action

System Diagnoses Private-Line Net Ills

By Ronald A. Frank
CW Staff

BURLNGTON, Mass. — Intertel, Inc. has introduced a microprocessor-controlled network control system that performs intelligent diagnostics of private-line data communications networks.

Event Management System One (EMS-One) includes both attended and unattended operating modes to monitor the performance of data nets for users who cannot afford to use dedicated front ends or customized software for this function, the company said.

EMS-One can anticipate and diagnose network problems and then take corrective action and initiate restoration of a communications link, the company said.

The system has a special-purpose plasma display with a 320-character screen that is used to initiate diagnostic commands at a central monitoring site. The EMS-One is designed to operate on four-wire, private-line 3002-type links without conditioning. Transmission speeds up to 9,600 bit/sec can be supported, Intertel noted.

An EMS-One system is designed for networks that have at least 100 drops and is presently restricted to analog links although future upgrades could support digital facilities, a spokesman said.

FOur Operating Modes

The system has four operating modes. The first of these, called Self-Learn, allows the control system to automatically determine the addresses of all active sites in the user's network. This mode is initiated in response to a single command entered at the system console.

The Automatic Monitoring mode sets up the system to continuously poll all active ports or lines. Any change of status is reported to the console operator with both displayed and audio alarms. The polling protocol allows for fast scanning, and a network of 10 lines and 20 drops can reportedly be scanned in less than 60 seconds.

The Automatic Predictive Maintenance mode can be programmed by the operator at the system console to automatically initiate on-line and off-line testing at predetermined times when the network is operational or nonoperational. Results are recorded on the system printer, allowing unattended testing during off-hours.

The fourth test type is Manual Model, which allows the user to initiate a particular test with control codes entered into the display console.

Automatic Monitoring

In Automatic Monitoring mode, 14 tests are continuously performed at each remote drop and each remote site would typically include a microprocessor-controlled remote test processor (RTP).

The central system controller is based on a firmware-driven multiple processor design. The central processor is connected to a system bus, and the operate console, printer and other I/O devices are interfaced to the central processor through serial interface ports. A total of 160 ports and 6,400 sites can be serviced by a single EMS-One system.

The control system can be used only with Intertel modems, but users of earlier network control systems can upgrade to the EMS-One without changing their installed Intertel modems, according to a spokesman.

System prices will range from $125,000 for a small EMS-One accommodating 10 lines and 55 drops to $375,000 for a large configuration having 30 lines and 160 drops. First deliveries are scheduled for early 1979 from Intertel, Inc., 6 Vine Brook Park, Burlington, Mass. 01803.

Smart Front Ends Enhance Usage Of Firm's CPUs

WARRENVILLE, Ill. — Western Electric Co. has installed three programmable communications front ends to replace hard-wired terminal control units.

The programmable 1380 communications processors from Memorex Corp. handle communications for an IBM 370/168, a 370/158 and two Amdahl Corp. 470V/6 systems at the data center in Warrenville, Ill.

The CPUs support an IBM Information Management System (IMS) data base, time-sharing option (TSO) and a management information and text system (Mits) for report generation and sophisticated word processing.

Communications to the data center include at least 12 50 kbit/sec wide-band lines, 20 9,600 bit/sec lines and more than 150 additional lines ranging from 2,400 bit/sec down to 300 bit/sec dial-up connections. The communications network links Western Electric operations from New York westward to Omaha, Neb., and southward to Dallas.

Coupled CPUs

All the CPUs at the Western Electric center are coupled to provide load sharing. The Memorex 1380s serve as front-end processors for the connections, with four channel adapters conneting each of the 1380s to the IBM and Amdahl CPUs. The communications processors are connected to provide backup in the event any one CPU has to be taken out of service.

Within the communication network, there are 15 remote job entry terminals and more than 150 interactive transaction terminals, all capable of accessing the computers.

Although the Memorex 1380 is designed for eventual support of the IBM Network Control System (NCS), the processors at Western Electric are fitted with host channel adapters attached to single byte multiplexer channels to provide the necessary interface and control logic to emulate the channel interface characteristics of IBM 270X transmission control units.

Purchasing's Edge Over Lease Leads to Independent Modems

DAYTON, Ohio — Independent modems with built-in Data Access Arrangements (DAA) are playing a role in on-line DP systems supplied to automotive dealerships by Reynolds & Reynolds, a service company with headquarters here.

Since 1974, over 3,600 of the VIM-II systems have been sold to dealerships throughout the country, providing on-line accounting, payroll, inventory management, car leasing and service merchandising for the automotive accounts. The dealerships have dial-up access to over 180 minicomputers located in 80 Reynolds & Reynolds offices nationwide.

Until recently, Reynolds & Reynolds rented 113B modems from the Bell System with an annual outlay of nearly $250,000. Then, early in 1977, Vadic Corp. introduced the direct-connect VA317S, which has been approved by the Federal Communications Commission for attachment to the dial-up network.

Reynolds & Reynolds has purchased over 1,000 of the Vadic modems, which do not require a DAA from the phone company. Using 300 bit/sec dial-up lines, the modems connect terminals in the dealerships to the 80 Reynolds & Reynolds computer sites. Some locations have as many as 35 Vadic modems.

"We chose Vadic VA317S modems for a number of reasons," according to Franklin

(Continued on Page 64)

Modems Designed to Suit Microwave, FM Systems

BOHEMIA, N.Y. — The Series 1260 QPSK data-over-voice or group band modems from American Modem Corp. are designed for terrestrial microwave links and satellite FM systems.

The series has solid-state integrated circuitry and self-checking features for fast maintenance, the firm said.

The modems interface directly with the baseband input of the FM above the highest voice frequency or at any place within the operating FM baseband. Data services can be provided from 1,200 bit/sec to 10M bit/sec.

The modems consist of an RF transmitter on which the data stream is modulated using a quadraphase modulation technique.

The equipment has interchangeable interface options allowing the use of RS-232, Bell 303, V35, or other special interface arrangements. Operating modes are full duplex, half duplex or simplex. The transmit and receive frequency ranges are 60 kHz to 50 MHz with a minimum carrier-to-noise ratio of 14 decibels. An optional error-correcting code can be provided.

The 1260 costs $4,975 from American Modem Corp., a unit of Intech Laboratories, Inc., 160 Wilbur Place, Bohemia, N.Y. 11716.

User Discovers Advantages In Independent's Modems

(Continued from Page 63)

Smith, communications research manager for Reynolds & Reynolds. "Most important, we can purchase and have them paid off within a few months. This is a much better environment than renting from the phone company.

"Also, we knew Vadic had a good, proven modem, and through purchase we'd be assured that equipment would be available when we needed it.

"The clincher was that with the VA317S we wouldn't have to rent a DAA from the local phone company. We're quite pleased with our decision. Everyone with dial access into the VIM-II system is happy with the ease of installation and uptime on the Vadic modems," he added.

Continual Updatng

The key to the capabilities of the VIM-II information system lies in the minicomputer installed in each Reynolds & Reynolds office. A variety of terminals (printing and/or CRT) are located in the dealerships and are connected to the minicomputers using the 300 bit/sec dial-up lines.

All reports are printed out right at the dealerships, eliminating mailing delays. Since the minicomputers are local, long-distance transmission problems and costs are eliminated.

Daily accounting transactions are entered through the terminals at the dealership. Reports and records such as general ledger, management schedules and daily operating control are printed out at the dealership, and accounting information is available almost 24 hours a day.

Dealers can ask for the account balance of a charge customer, the book balance of a used car or a general ledger account balance. Also generated are management reports such as an aged listing of new or used car inventory, a listing of all past-due receivables and cash in bank.

Since all input of daily business operations is handled at the dealership, records are continually updated. For example, using the VIM-II, the dealer can enter the last day's business and tell the minicomputer it's the last day of the month. Journals, schedules and the general ledger are printed out on the dealer terminals at night. The next day, the business manager is ready to pull the financial statement.

Other leasing reports include a monthly lease audit, which provides a total audit of every active unit for the month; note payable report, which shows the loan balance per unit after monthly payments have been applied; and unit replacement analysis, which indicates the most profitable month for a customer to sell a vehicle by comparing book value with the current market value.

The VIM-II system prepares and prints payroll checks in the dealership at the push of a button, Smith said, and also provides the dealer with management information as well as the payroll records such as the payroll register, the deduction register, the labor distribution report and 941a and W-2 forms.

The latest additon to the VIM-II package is the Service Merchandising System (SMS). A terminal in the write-up area of the service department enables the service manager or advisor to meet the customer with information personalized to his particular vehicle, such as customer name, address and phone number, delivery date, mileage, serial number, car description and suggested service.

Also available is pertinent information from the customer's last visit. This up-to-the-minute information reduces shop comeback costs, speeds repair order write-up and minimizes customer file upkeep, Smith said. A new or used car prospect list can be generated since the age, mileage and condition of the present vehicle is instantly retrievable.

Check-In System Eases Airport Growth Problem

LONDON — A system built on programmable terminals is helping British Caledonian Airways solve the problems of maintaining optimum customer responsiveness in the face of significant business growth and airport expansion.

After evaluating two types of check-in processing — centralized mainframe and stand-alone distributed processing — British Caledonian selected Raytheon Data Systems Co.'s Raycheck system as the most cost-effective solution. Raycheck was installed at London-Gatwick Airport last year.

According to S. Thomas, British Caledonian's manager of communications services, the airline required a system that would allow complete check-in activity at any of the 46 airport and town check-in terminals, yet would permit control of overall check-in operations. Also important was simplicity of use by check-in personnel.

"We wanted to take staff members who had airport experience and expect them to understand the system in a very short time," Thomas said.

"As for technical objectives," he recalled, "we wanted a true user operation — we were not interested in any system that required day-to-day technical support from anyone other than the vendor maintenance staff.

"Also, the processors had to work in the normal airport environment without extra special facilities, and we wanted dual processors for backup in case of one processor failure. Finally, we wanted a single vendor, already in the airline market, to take total responsibility for hardware and software."

The Raycheck system installed includes two PTS-1200 system processors with redundant disk memory storage and more than 50 PTS-100 intelligent, programmable terminals. The PTS-1200 computers hold permanent and semipermanent data — aircraft weights and configurations, cargo-hold limitations, flight schedules, excess baggage rates, currency conversions and instructions on how specific flights should be checked in.

Other, "working" information is fed to the host systems from the remote terminals on a day-to-day, hour-by-hour basis. This information includes passenger reference numbers, names and service information, departure gates and fuel and cargo specifications.

How It Works

In operation, the check-in procedure starts when a passenger presents a ticket to the British Caledonia check-in agent. The agent types in the flight number and passenger name and hits the "Enter" key.

The Raycheck system immediately presents all pertinent information about the flight and displays the final destination, then searches its files to find and display any related passenger information — if the passenger has requested a special diet, for instance.

If the passenger has a common name like "Smith," the agent can request Raycheck to display all the same names at the bottom of the screen so booking accuracy can be confirmed by agent and passenger. If the name does not exactly match, Raycheck also displays similar names for the agent to select.

The British Caledonian agent then weighs the passenger's baggage and enters the result into the system. Raycheck computes, for the passenger's ticket class and destination, the total baggage weight and displays any excess baggage charges to the agent. Charges are displayed in local currency, but Raycheck can automatically convert rates to any of more than 25 different currency types if necessary.

If a seat has not been preallocated, the system displays the complete aircraft seating configuration, showing available seats, smoking and no smoking sections, film screen visibility and proximity of emergency exits so the agent can select the most suitable seat for the passenger..

Once these details are completed, Raycheck automatically prints the correct boarding pass. If there is an error, the boarding pass will not be printed until the agent corrects the information.

According to Thomas, "This is where personal service has a real meaning — with individual information about passengers available at every check-in point and not just at one specific, dedicated desk."

Terminal Transactions

While check-in agents are processing passengers for an upcoming flight, the British Caledonian load controller is also using Raycheck to figure aircraft weight and balance. Here, Raycheck calls up pertinent operating specifications for the flight-to-be, including flight date, aircraft type, version and registration, basic weight and index and standard taxi fuel.

To this the load controller adds information concerning adjustments to the basic weight, numbers and distribution of crew and bags, pantry weight and distribution, planned cargo and mail and any other miscellaneous items, along with "ramp" fuel and any required amendments to taxi fuel.

When all passengers have been signed in, the Raycheck system validates the data, flagging any errors, then calculates and displays final operating weight and take-off fuel.

(Continued on Page 66)

Steel Maker Gains Responsiveness to Customers

LATROBE, Pa. — Drills, reamers, taps and cutting tools used to shape metal products require special alloys known as high-speed and specialty tool steels. Teledyne Vasco here is one of the world's largest producers of high-speed steel, and its need to be responsive to customer orders recently led to automation of its order entry system.

Within 10 minutes after an order is received at a sales office, shipping papers are now ready at the appropriate stocking point or a production order is entered on a plant schedule, thanks to the system, which uses Bell Dataspeed 40 terminals.

Orders generally come in by telephone to a sales office. Working from inventory listings which are updated daily from Latrobe, a sales engineer prepares an order for delivery out of local stock, prepares an order for shipment from another warehouse location or issues a production order.

If more than one source is involved, separate orders are entered for each source.

The Dataspeed 40 terminals include the CRT, dual print stations and a Sykes dual diskette preprogrammed to store a data base of order forms, customer accounts and stock description information.

Orders are prepared by calling up different pieces of information from the disk and fitting them together on the CRT. The terminals handle administrative message traffic when not in use for order entry.

The terminal operator starts by displaying an order form in protected format on the CRT and entering a two-digit alpha code to designate the facility to which the order is to be directed. An account information data mask is retrieved from the diskette and superimposed onto the order form.

The next retrieved entry is an item description which adds inventory codes, descriptive information and unit prices to the display. The operator completes the order by entering quantities and visually checking all entries. Order preparation complete, the operator presses a Bell rapid dial switch which places a call to a Mitron Systems Corp. MDRS-9 message forwarder terminal located at the Latrobe DP center.

Order transmission to the message forwarder terminal is complete 10 seconds after the connection is established.

The message forwarder converts the two-character alpha routing code to an area and station telephone number and dials a Dataspeed printer terminal at the designated facility, which is preloaded with appropriate forms. The order is ready for processing a few moments after its acceptance.

Besides redirecting incoming orders to the appropriate stocking point, the MDRS-9 copies them onto its computer-compatible tape. This tape record is processed at night to update inventory and the financial data base.

Not all orders are sent forward. Production orders and others destined for Latrobe have an address code which limits the MDRS-9 to recording the information onto magnetic tape.

Some orders have invalid routing codes or cannot be sent forward because it is not possible to access the recipient terminal. These are directed to a Bell 4210 magnetic cartridge terminal so they can be recalled to a CRT and corrected or retransmitted when the destination terminal is able to collect traffic.

After order traffic is complete, financial data tapes generated by the corporate computer center are mounted on the MDRS-9 for transmission to the field.

System Matches Airport Growth

(Continued from Page 65)

The load controller can then distribute "dead" loads according to normal practice and check them against a balance form displayed by Raycheck.

When final weight and balance have been reconciled against allowable maximum specifications shown by the balance form, a loadsheet is printed, checked against the Raycheck display and approved. A load message is sent automatically to the route stations along the flight.

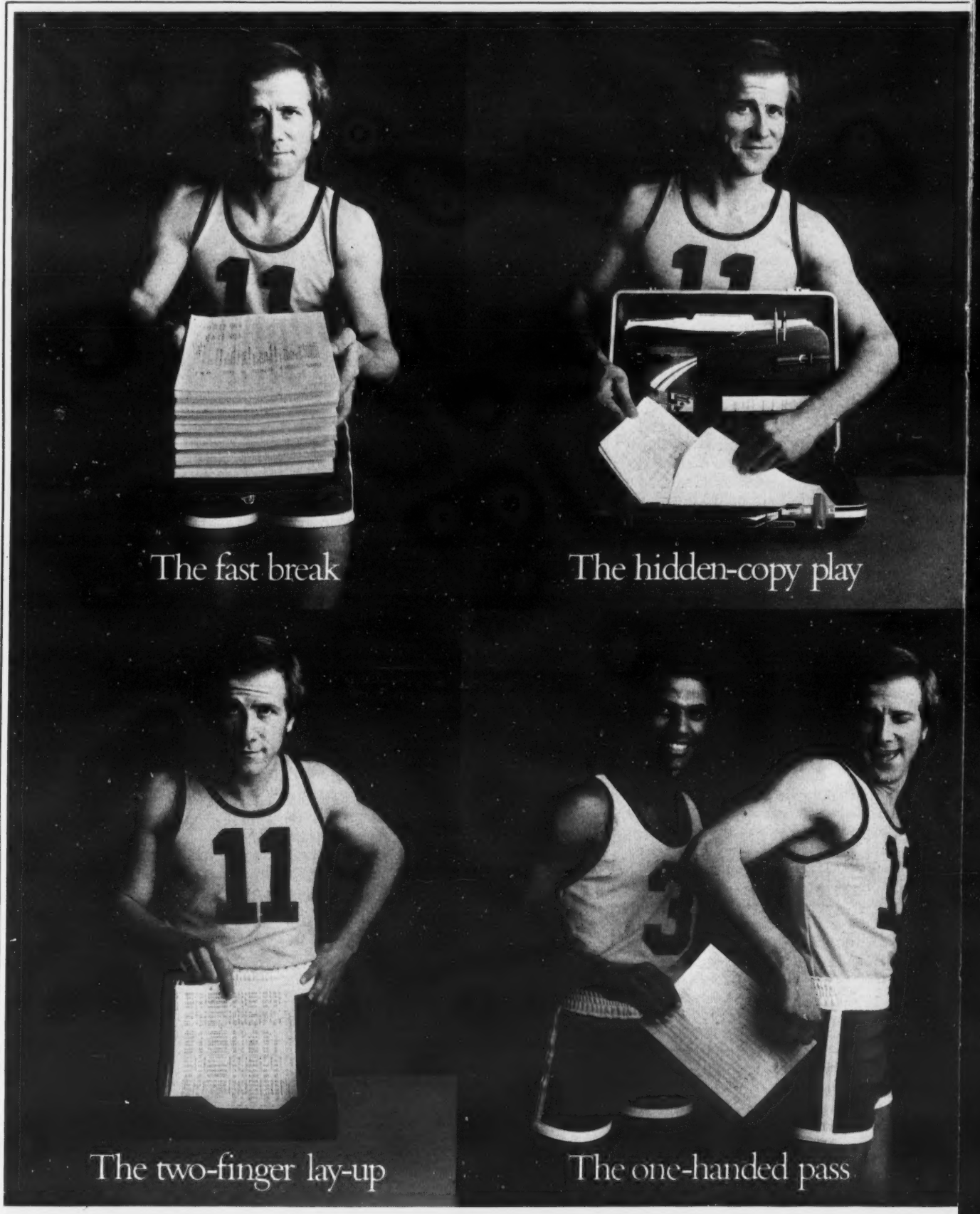
Report for Supervisors

In addition to check-in and load/-balance procedures, Raycheck provides fight information for authorized supervisors whenever requested. A typical supervisor display will list flights according to takeoff times — to show current "workload" — and will list flight number, status of flight at terminal or airport, aircraft configuration and available seats and predicted total load of passengers by class. If this is greater than the seats available, a remark "overbook" is written under the flight data.

Other Advantage

Besides the economic advantages of Raycheck — British Caledonian projects total cost-justification within five years — an important benefit to the airline is Raycheck's ability to tie in to a standard airlines reservation system whenever necessary.

Operation of the British Caledonian Raycheck system began last May and "second-phase" installation, consisting of additional check-in terminals, was completed in late 1977.



Processor Terminal Bows

HOUSTON — CMC Marketing Corp. has announced the availability of another model in the Processor Terminal series. Designated the MCS-PT112/32, the system includes a display, disk storage, a full keyboard and a 12-slot motherboard. It may be used either as a stand-alone processor or as a processor terminal in a larger system, the company said.

Features of the MCS-PT112/32 include a 15-in. monitor with a face plate of smoky plexiglass which reportedly reduces glare and enhances type visibility; a full upper and lower case Ascii keyboard with eight user-designated special function keys; and a 16-key numeric cluster pad. One Shugart SA-400 minifloppy disk drive is standard, the firm said.

A 32K static random-access memory (RAM) is provided with additional RAM as an optional item, and a disk controller handles three minidrives.

The I/O board provides three parallel and three serial ports with selectable transmission rates of 75 to 9,600 bit/sec. Outputs are standard RS-232C or TTL.

Software provided with the system includes the CP/M operating system and Superbasic.

The Processor Terminal Model MCS-PT112/32 assembled and tested is priced at $4,795 from CMC Marketing Corp., Suite 515, 5601 Bintliff, Houston, Texas 77036.

Mini-Based EFT System Runs Alone or With CPUs

GARDEN CITY, N.Y. — Instant Transactions Corp. of America is offering the IT-2100, a minicomputer-based electronic funds transfer (EFT) system.

The IT-2100 may operate as a stand-alone, self-contained EFT switch and transaction processor, or may interface with one or more central DP systems.

Features incorporated within the IT-2100 system consist of network control, message routing, transaction application processing and multibank settlement and reporting. The system is designed to accommodate "all popular" point-of-sale (POS) terminals as well as automated teller machines, (ATM) the firm said.

At the conclusion of each processing day, a multibank settlement is initiated, which includes settlement reports, cash letters, merchant statements, and customer descriptive statements as well as marketing, statistical and operating reports.

Features incorporated within the IT-2100 system offer the capabilities to operate as a switch and/or transaction processor; support POS terminals and ATMs; operate in a multibank environment; interface with major credit card networks and stand alone or interface with mainframe systems.

The system provides electronic paperless processing, supports customer- or clerk-operated terminals and prepares customer descriptive statements, the firm said.

The IT-2100 utilizes most high-level software. The hardware configuration consists of a main processor operating at 2 MHz, one or two data communication processors, up to 147,000 bytes of memory and nine channels for I/O devices.

Peripherals include a 33 msec disk pack, magnetic tape, card reader, etc.

Arrangements are available for a one-year lease at $6,000 per month from Instant Transactions Corp. of America, 1035 Stewart Ave., Garden City, N.Y. 11530.

ID System Designed As NCR 270 Upgrade

SUNNYVALE, Calif. — An Identikey card reader and customer identification system designed to upgrade the NCR Corp. Model 270 teller terminal has been introduced by Atalla Technovations.

The Identikey system is said to extend the life of the Model 270 by providing the terminal with plastic card and personal identification number (PIN) capabilities. The system is designed to let banks and thrift institutions modernize their NCR 270 terminals when switching to a plastic card environment from a passbook program, a Technovations spokesman said.

The Identikey/NCR 270 system consists of a card reader console, two customer PIN pads, intelligent controller and built-in electronic interface package, the spokesman added.

The Identikey system reportedly connects directly into the teller terminal without hardware or software changes. The system is also said to be designed for easy operation by teller and customer. During a transaction, the customer's account number is read by the card reader. This process replaces manual entry and avoids possible key stroke errors, the company said.

The Identikey system allows Model 270 users to replace signature verification, "test questions" and other customer verification methods with a secure PIN system.

According to Technovations, the Identikey/NCR 270 system has both on-line and off-line positive identification capabilities. It can reportedly verify a customer's identity even when the CPU is busy or down.

The Identikey/NCR 270 system costs $1,750 from Atalla Technovations, 505 W. Olive Ave., Sunnyvale, Calif. 94086.

Tektronix 4020 Series

How can the first name in graphics come up with the last word in alphanumerics?

By turning both to your advantage.

From Alphanumerics to Graphics . . . now your terminals can keep pace with your needs. Our new 4020 Series terminals let you plan for the day when alphanumerics isn't enough. Without trading in terminals or buying more capability than you need right now.

Our 4025, for example, is a smart, refresh device that starts with alphanumerics and grows. First into forms ruling. Then into graphics. All without one capability compromising the other. As a complement, the 4024 offers data entry and forms capabilities. So you can prepare for the future with maximum economy and Tektronix quality.

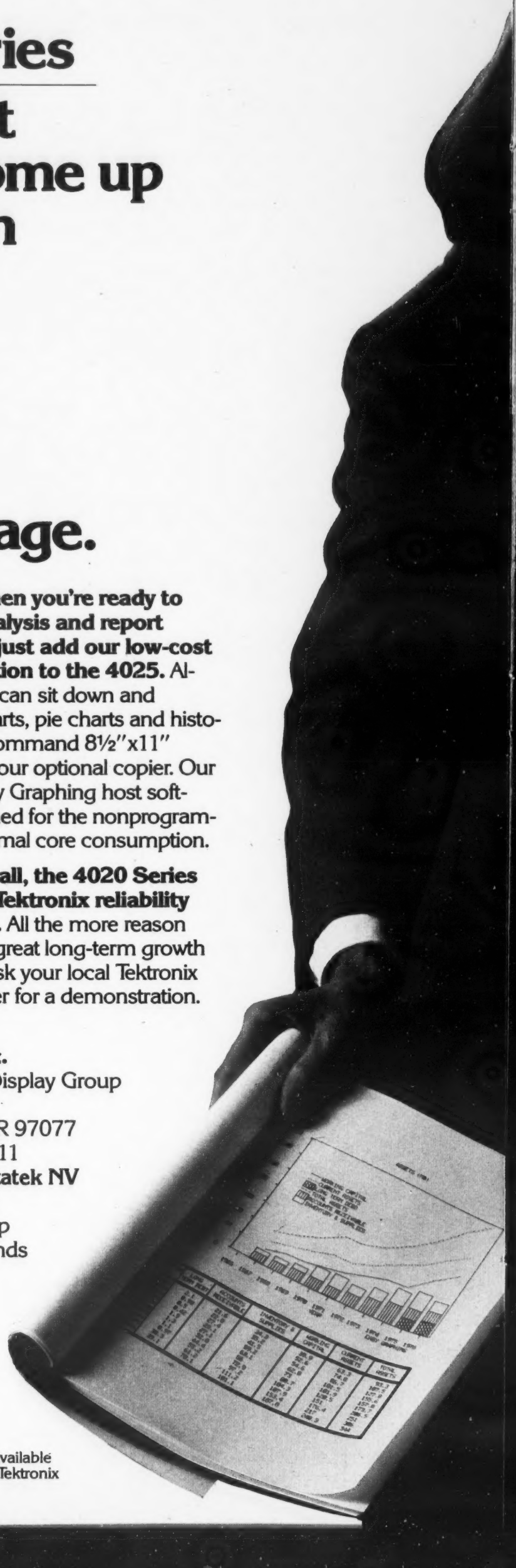
Begin with the basics: alphanumerics at its best. Both configurations include expandable memory. Complete editing. Fields. Scrolling. Familiar, user-definable keyboard. Easy-on-the-eyes screen.

Plug in the forms ruling option and either terminal can recreate just about any source document. With one keystroke entry. Easy information call-up. Ideally proportioned 34-line deep screen.

And when you're ready to add data analysis and report generation, just add our low-cost graphics option to the 4025. Almost anyone can sit down and create bar charts, pie charts and histograms, and command 8½"x11" facsimiles off our optional copier. Our PLOT 10 Easy Graphing host software is designed for the nonprogrammer. For minimal core consumption.

Best of all, the 4020 Series comes with Tektronix reliability and support. All the more reason why they're a great long-term growth investment. Ask your local Tektronix Sales Engineer for a demonstration. Or write:

Tektronix, Inc.
Information Display Group
P.O. Box 500
Beaverton, OR 97077
(503) 682-3411
Tektronix Datatek NV
P.O. Box 159,
Badhoevedorp
The Netherlands



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CONTROL DATA CORPORATION

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Desktop Switching Units Offered

PROVIDENCE, R.I. — International Data Sciences, Inc. has added three desktop switching devices for communications applications.

The Model 8574-D A,B,C,D,E,F CRT Selector Switch is an addition to the series 8500 EIA patch, monitor and switching modules. The Model 8574-D allows the user to switch any two-wire input to any one of six 2-wire outputs. All connections are made at the rear panel.

The desktop module allows the user to manually select any one of six CRT displays. The unit is suited for switching the IBM 3270 interface or any 2-wire telephone line, according to the vendor.

A six-position rotary switch on the front panel instantly switches any two-wire input from a rear panel BNC labeled "Common" to any one of six BNCs labeled A to F, a spokesman noted.

This module is available for desktop switching only, and no power is required, he added.

Backup Switch

The Model 8509-D Spare Modem Back-Up Switch was designed to switch the combined EIA RS-232 and telephone line interface of a faulty on-line modem to a backup system.

The Model 8509-D incorporates a "chaining" feature which allows a single spare modem to be switched in to replace any one of a group of on-line modems, according to the spokesman.

This capability can reduce downtime to almost zero by eliminating the need to immediately replace a faulty modem.

The company also has the Model 8506-D A,B Selector Switch which is used to switch the 25-pin EIA RS-232 or CCITT V.24 interface to either of two outputs.

The unit can switch one modem to either of two front-end processor data channels or to either of two data terminals. The unit can also be used to switch a data channel from its on-line modem to a back-up modem or for switching from a leased line modem to a dial-up modem.

The Model 8574-D costs $175; the Model 8509-D is priced at $250 and the Model 8506-D costs $140. Delivery is 30 days except for the 8506-D, which is available immediately from International Data Sciences, 100 Nashua St., Providence, R.I. 02904.

CPU Terminal Compatible With 16-Bit Minicomputers

GAITHERSBURG, Md. — CPU, Inc. has introduced an intelligent terminal operating within the CPU Text Management System (TMS), a stand-alone and/or shared-logic word processing system.

The Ph.D., is reportedly one of the first intelligent terminals to offer 16-bit processing power and architectural compatability with large minicomputers. The system is based on the Digital Equipment Corp. PDP-11/03 processor with 4K (16-bit) words of random-access storage, a serial I/O interface, a CRT capable of displaying 24 lines of 80 characters, plus systems software. This minimum configuration sells for $3,399.

The Ph.D was designed as both a stand-alone system and a component in a distributed network. It uses the same 16-bit architecture as large minis and offers the same instruction set as the PDP-11/35 and 11/40.

It is program compatible with the PDP-11 series, according to the vendor.

Standard software includes a selection of PDP-11 operating systems and languages.

Other software offerings include the SSP-11 scientific subroutine package RSX-11S operating system and TMS.

Communications options for PH.D features asynchronous, synchronous, Synchronous Data Link Control (SDLC) and programmable communications interfaces.

CPU is at Suite 130, 4 Professional Drive, Gaithersburg, Md. 20760.

Compact CRT Comes Same Size As 15-In. Monitor

ANN AROBOR, Mich. — Ann Arbor Terminals, Inc. has introduced a compact teletypewriter-compatible CRT terminal, the Model 400E.

The 400E was described as the size of a standard 15-in. monitor. The terminal utilizes a low number of components so that display and monitor electronics, plus power supply, have been mounted directly on the monitor chassis, the firm said.

The unit is standard with a 2,000-character memory. The display format is 24 lines by 80 characters, with an additional line of memory that can be accessed in either Roll or Scroll modes.

Three character accents — blink, dim and reverse video — are standard, as well as RS-232 data interface and RS-170 video output for driving auxiliary monitors.

The Model 400E includes a 72-key detachable keyboard which generates the full 128-character Ascii set. The keyboard is standard with a separate numeric pad and individual cursor control keys.

All command and control functions can be executed from the keyboard.

Prices begin at $1,200. Ann Arbor Terminals is at 6107 Jackson Road, Ann Arbor, Mich. 48103.

Intertec Teleprinter Features Micro Control

CHARLOTTE, N.C. — A 120 char./sec teleprinter from Intertec Data Systems Corp. makes use of microprocessor control and reportedly includes such features as an RS-232C interface, current-loop interface, an IBM Selectric-configured keyboard with a numeric keypad, 132-column width printing, horizontal and vertical tabs and a keyboard lock out feature.

Field-upgradable options for the Superterm include 180 char./sec printing and a microcassette for off-line data collection.

A variety of print and character control features provide the user with the opportunity to configure a Superterm in many ways, Intertec said. The basic terminal prints at speeds up to 60 char./sec with a 120 char./sec option available.

Printing is performed by Intertec's impact matrix printhead, which is guaranteed for a period of one year.

Options include an APL character set and 32 programmable characters which can be designed by the user. The terminal has full forms control capability, according to a spokesman.

The Superterm costs $1,995 from Intertec at 1851 I-85 South, Charlotte, N.C. 28208.

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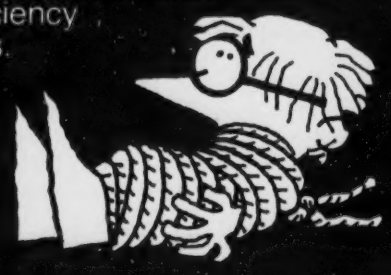

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Remex Punched Tape Systems Offer Serial Link

IRVINE, Calif. — A series of desktop punched tape systems for data communications and microprocessor applications has been announced by the Remex Division of Ex-Cell-O Corp.

Called the Remex 8050 series, the systems were designed to meet Underwriter's Laboratories requirements. They feature push-button controls for automatic tape feeder preparation with feed holes or all holes punched and tape duplication, the firm said.

The perforator motor is idle during nonpunching time to provide silent stand-by operation, a spokesman added.

Remex 8050 systems are available in reader/perforator or perforator-only configurations. Both styles are also available with a built-in RS-232C serial interface for compatibility with "most terminals, modems, printers and other communications peripherals," the company said.

The perforator mechanism operates at 50 char./sec, and the circuitry includes a 128-byte buffer to allow true asynchronous operation in a parallel mode or burst operation up to 1,200 bit/sec in the serial mode, the spokesman said.

The reader mechanism can process standard 5-, 7- and 8-channel tape and 6- and 8- channel typesetter tape in both directions at a rate of 300 char./-sec or up to 2,400 bit/sec with the serial interface, he noted.

The RS-232C interface adds two serial ports, allowing the unit to be connected to both a modem (or computer) and another peripheral device, such as a CRT terminal or printer. A 20mA current-loop interface is also accessible.

Interface send and receive rates are independently selected by two movable jumper plugs. Send rates can range from 110- to 9,600 bit/sec. Receive rates can be set at 110- or 1,200 bit/-sec, the firm said.

Other interface functions can be remotely controlled by standard Ascii control characters, the firm said.

Prices for Remex 8050 systems start at $1,900 for a perforator-only unit without the Remex RS-232C interface. Remex is at 1733 E. Alton St., P.O. Box C19533, Irvine, Calif. 92713.

Transactor Has Gas Display

GRANDVIEW, Mo. — Computerwise, Inc. has added a series of small alphanumeric data terminals called the Transactor III. The terminals utilize a microprocessor.

Available features include synchronous or asynchronous line support for both dedicated or polled multidrop environments, the firm said.

The Transactor III includes a single-line 32-character gas discharge display and a 53-key, teletypewriter-style keyboard. It can be directly attached to "any" computer with an RS-232 or 20mA current loop interface or to a communications line through a modem, a spokesman said.

Switches allow the user to select the operating mode, including 110- to 9,600 bit/sec transmission speeds, full or half duplex, even/odd/no parity and the station address, the company said.

The standard unit supports Ascii-coded data, with Ebcdic-coded data available as an option. Other options include an expanded 256-byte data buffer to allow up to eight lines of data to be accessed off-line.

An addressable RS-232 port can be provided to allow devices such as printers, badge readers, optical character recognition or bar code wands to be attached.

The terminal can be provided with any line protocol for direct replacement of IBM 2260, 3275 or other types of terminals, the spokesman said.

The standard terminal is available for $995 from Computerwise at 4006 E. 137th Terrace, Grandview, Mo. 64030.

Device Doubles Decwriter Speed

SKOKIE, Ill. — A device said to double the speed of the Digital Equipment Corp. Decwriter II has been introduced by Larks Electronics and Data.

The Larks Accelewriter reportedly allows any LA36 Decwriter to operate at 600 bit/sec. The adapter converts the standard 110/150/300 bit/sec Decwriter to 110/300/600 bit/sec.

The Accelewriter changes the internal timing of the Decwriter and causes it to print at 60 char./sec, a spokesman said.

Installation typically takes less than one hour and requires the removal of two integrated circuits from the logic board of the Decwriter, he said. These are replaced with low-profile IC sockets.

The device is then installed in the board in place of the two original ICs, and the logic board is reinstalled in the Decwriter, he explained.

The Decwriter can be reconverted to its original configuration by unplugging the adapter and installing ICs of the original types in the sockets, the spokesman noted.

The Accelewriter costs $95. Installation is available in selected areas, Larks said.

The company can be reached through P.O. Box 22, Skokie, Ill. 60077.

To Real-Time Order System

Forms Analysis Integral to Conversion

By Robert H. Blackwood
And Elizabeth Welch
Special to CW

PALM BAY, Fla. — Making the changeover from a manual order entry-shipping-invoicing system to a real-time computer system requires a lot of detailed, specialized paper systems work. When Harris Corp. decided to take this major step, we called on a forms manufacturer to work with our own specialists in formulating our documentation needs.

Our rapidly expanding business had simply overwhelmed our former manual order entry and shipping system. Incoming orders were manually edited or such things as customer address confirmation and credit check. Then, a spirit process duplication master was typed. From that master, as many as 18 sales order copies were run, depending upon the type of order and destination. These provided copies for various scheduling, order status and line functions in the plant.

At the time of shipment, plant clearance personnel used the order information to initiate shipping documents. This necessitated preparation of another spirit process master and printing of a second form set. To prepare invoice papers, the original master was used to run off invoice form sets.

There were variations of this same procedure to fit unique order, production and shipping needs. Consequences of this system were duplication of data recording, error potential and paperwork bottlenecks which adversely affected production scheduling, order tracking, customer service response and many other vital functions.

In addition, the procedures created a wide margin for making errors in calculating price extensions and back order quantities. The extent of clerical effort needed to support this type of system made it difficult to handle increasing business volume without adding staff.

Multipart forms play an important part in Harris' changeover from a manual order entry-shipping-invoicing system to a real-time system.

Obvious Solution

The obvious answer for us was to create an automated data base, with the ability to operate in a real-time mode from order entry through final shipment and invoicing. A study had indicated that this approach would be both cost-effective and timely. The result was an intelligent terminal system with on-line printers, keyboard input and CRT display units, through which information could be transmitted and retrieved from the system's data base.

To assist in the preparation of system documentation, we called on specialists from Standard Register Co. to conduct a review of the new system's requirements, to study the old methods and documents and to develop the best forms and designs for the new system. They worked closely with Harris personnel in accomplishing these objectives.

A series of four multicopy continuous forms was designed: a six-part sales order/-acknowledgement, a three-part plant clearance authorization, a six-part packing list and a six-part invoice. The basic format and layout of each form is standard, with slight design variations to fit unique functional requirements.

Immediately beneath the heading area of each form is a section in which data base in-

(Continued on Page 79)

System Aids Money Order Reconciliation

Special to CW

DENVER — The American Express Co. is using a multimedia data entry system at its accounting center here for the reconciliation of the firm's money orders.The operation is currently processing in excess of 60,000 documents monthly, a figure that continues to grow.

"Our worldwide sources and the success of our marketing program have increased the demands on our accounting center," Gary L. Davis said.

Davis is director of document processing for American Express Money Order Operations. "The data capture section currently has a staff of 27 operating on two shifts, and we expect to expand our capability within the next year.

"Our present system became operational in July 1976, but our processing requirements have more than doubled since that time, forcing us to look at expansion in the near term," Davis said.

Old Key-to-Tape System

Prior to July 1976, American Express reconciled money orders on a key-to-tape system. "We found that our increasing volume simply exceeded the limits of the system in use at the time," Davis said. "We needed an economical scanning capability with the potential to meet our growing processing needs."

Davis and Pansy Willings, manager of data capture, reviewed available alternatives and narrowed their selection to four systems. "The decision to utilize the Cummins-Allison Corp. Series 4400 Keyscan multimedia system was based on best value. No other system offered the features of the Cummins package within its price range," Davis said.

The Cummins-Allison 4400 includes a 128K processor; 9.8M-byte disk drive;

(Continued on Page 76)

System Helps Firm Handle Money Orders

(Continued from Page 75)

9-channel, 1,600 bit/in. tape drive; 16 CRT/keystations; 13-pocket reader-sorter with magnetic ink character recognition (Micr) read systems and optical character recognition (OCR) read systems.

According to Davis, the decision has proved beneficial since the firm is able to meet its volume processing requirements with a rejection rate of less than 1%. "However, our growth has far exceeded our expectation and we are fast approaching the limits of our present Cummins system. We plan to upgrade to a faster, more powerful Series 5400 Keyscan system within the immediate future," he added.

Retail and financial institutional money orders are processed separately by the data capture section. Following preparation, money orders are scanned on the Cummins system to capture Micr-encoded serial numbers. Key operators then retrieve data records from the disk and insert the proper dollar amount.

After each batch has been completed, data is transferred from disk to magnetic tape. The data is input to an IBM 370/145 and edited against a master file. An edit listing is generated and sent to a balancing section. Balancing/-edit errors are researched, corrections are key entered and the correction data is merged into the input files.

The OCR read system is used to scan "trust receipts." These documents are used to control the distribution of money orders to the issuing institutions.

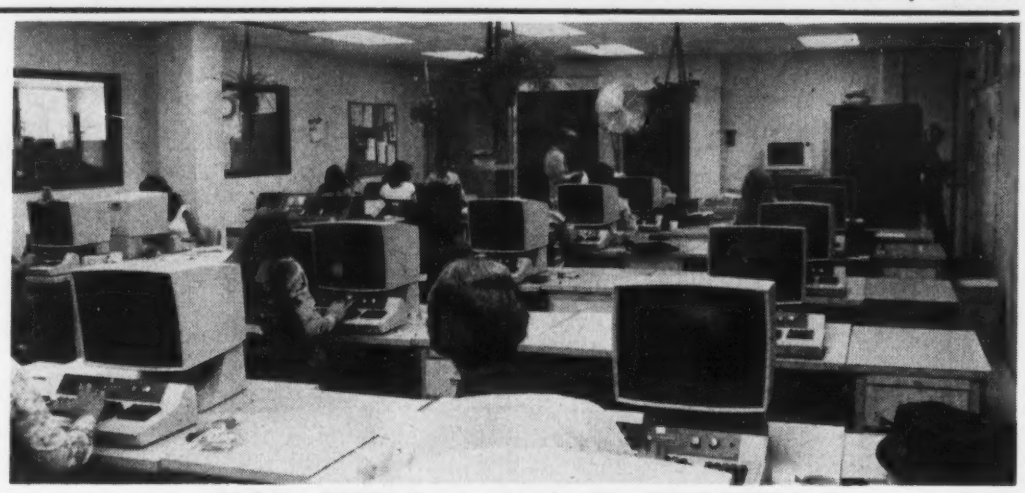
Keystation Functions

Fourteen of the 16 CRT/-keystations are used solely for keying data, one is used for utility/supervisory functions and one is used as a scanner control console.

"During the transitional period from our old key-to-tape system to the Keyscan System, we experienced typical startup problems, but the system is running very well for us now," Davis said.

Key entry operators had no problems with the transition to the Cummins system, according to Willing.

Although the current Series 4400 is approaching capacity, Davis is confident the more powerful 5400 Keyscan system will meet the projected needs of American Express.



American Express has an extensive data capture section.

Off-Line Printing Nets State $90,000 Savings

Special to CW

MIDDLETOWN, Pa. — A conversion from standard on-line printers to off-line non-impact units at the Central Management Information Center (CMIC) here should save taxpayers $90,000 the first year, according to Pennsylvania secretary of administration James N. Wade.

The information center is part of the Commonwealth of Pennsylvania Governor's Office of Administration. It handles DP for 37 departments and agencies, including accounting and budgeting systems, personnel management, payroll and retirement/-annuity plans.

In addition, the center provides contract services to commonwealth agencies.

The decision to change printing equipment was the result of a study conducted by Kenneth H. Kase, CMIC director, and Frederick A. Wieseman III, assistant director of the operations division.

"We handled about 30 million sets of forms a year, a lot of it multipage work. The big computer printouts were cumbersome to work with and users often had difficulty reading the fourth or fifth copy of a carbon set," Kase said.

"We were getting a lot of repeat orders. When we asked why the first report wasn't kept, we were told that there was no place to store it," he added.

Two Systems

For reasons like these, the study indicated a switch to other methods and CMIC installed a Xerox Corp. 1200 printing system in January 1977. A second unit was added in July. The 1200 prints on plain 8-1/2 by 11-in. paper at the rate of 1 page/sec.

Now, CMIC reported, output is produced faster, more clearly and at one-half the cost. Also, Kase said, "the removal of high-speed printing from the computer room allows computer operators to dedicate themselves to their primary function. Throughput has improved. We're getting more jobs in because the operator isn't worried about the peripheral work."

There are by-product advantages in using ordinary paper instead of a variety of preprinted computer forms.

"In state government, there's red tape involved in purchasing supplies," Wade explained. "You need a purchase requisition for almost everything, and when you're using different size and weight papers, it can be a real headache.

"With the 1200 system, we can submit a single purchase order for almost a year's supply of paper. Buying less frequently, we can order direct mill shipments at a reduced price. And we have considerably reduced the amount of storage space we need," he added.

Less Demanding

The switch to off-line printing has also reduced demands on CMIC's Univac 1110 computer system giving it more time to process other applications.

"Calculations show we save three hours of overhead time every 24 hours with the off-line system," Wade said.

At CMIC, the first six working days of the month are the busiest. During this period, the second 1200 is necessary to meet deadlines.

"We have due-in and due-out dates for everything we handle," Wieseman said. "That's why our host computer is redundant, across the board. If a path goes down, we have another to bring up.

"We need the same backup for off-line printing. The second Xerox 1200 system enables us to add more volume for the other 16 working days and still meet due-out dates. One operator can easily operate both systems at the same time."

"The center operates on a 100% charge-back system," Kase said. "We budget what we think our costs will be for the year and then collect that much revenue from services rendered. We are very cost-conscious about performance and the use of resources.

"We are running 30,000 jobs a month now," he added. "A year ago it was closer to 20,000. The fact that we have increased productivity and lowered costs to the end user is significant."

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BASF The Original.

Computer Tape Disk Packs Diskettes Cassettes Mag Cards

Analysis Aids Conversion To Real-Time Order System

(Continued from Page 75)

formation relative to order identification, shipping instructions and customer number is shown. On shipping documents, the first line of this section carries shipper identification, weight and waybill number. On the sales order/acknowledgment copy, that section is used for a preprinted message of acknowledgement to the customer.

The body of each form, used for the display of line items ordered, is uncommon in that it separates each line item entry into two horizontal bars of equal depth, one screened in the form's ink color and the other in white. The column headings are similarly treated and indicate the type of information contained in each bar.

In the main descriptive column, for example, the screened bar carries the customer part number and revised quote number, while the white segment carries the Harris part number and the specification number. Subsequent columns contain delivery requested, delivery scheduled, quantity ordered, unit price and extension.

Real-Time Forms Preparation

With the exception of the invoice, which is processed in batch mode on a high-speed printer, all the forms are prepared real-time on terminal printers in the customer services (order entry), finished goods (production control) and shipping areas.

Customer orders are normally received in plant by TWX, occasionally by mail. An order-entry clerk enters the necessary information from this order to the computer data base via keyboard input. This includes a new order number for the customer, the customer account number, shipping location and coded shipping instructions.

The system returns verification information, identifying the customer by name, checking on shipping data, credit status and other pertinent information. The order entry clerk then enters the line items detailing product quantities and requested shipping dates. From this point, the computer system tracks the order status to completion.

An "action report" is provided to Production Control, listing new orders to be scheduled. The scheduled ship dates are entered via keyboard on-line to the data base and when the computer system recognizes that all items on an order have been scheduled, it triggers printing of the sales order form on the customer services (order entry) terminal printer. Under normal circumstances, the time from original order entry through order confirmation and generation of customer acknowledgement is no more than 24 hours.

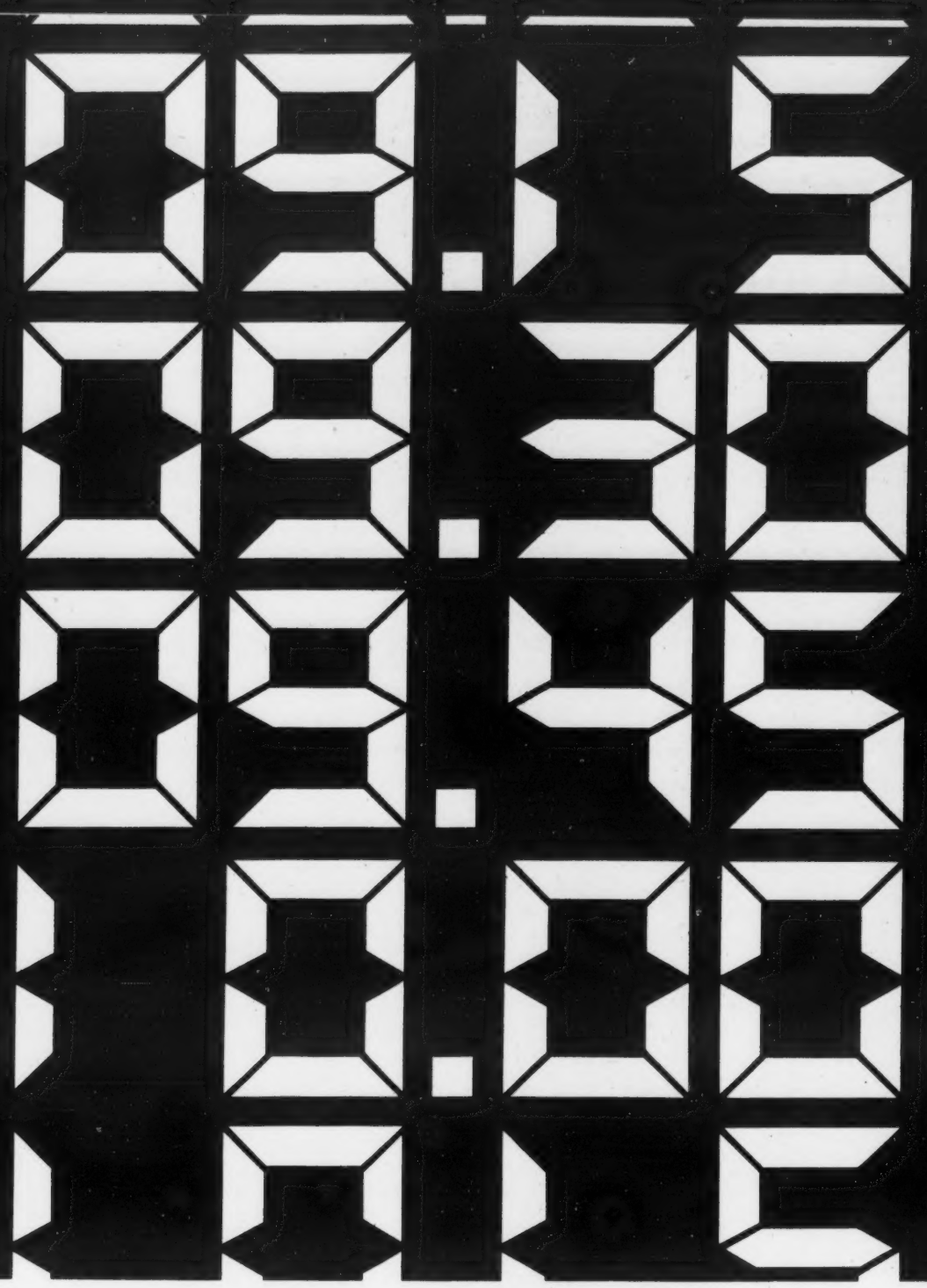
Clearance Form Produced

Daily and prior to scheduled shipping dates, shipments are initiated in the finished goods department when a plant clearance form set is produced by the computer system. In that transactions, inventories, order status, backlog and current credit status are confirmed by the computer system. The finished goods area pulls the product from inventory for shipment and enters this transaction into the system.

The three-part plant clearance form moves with the product to the quality assurance section for appropriate inspections. System inputs are made to indicate tests made and passed and the form set is separated for copy distribution. The original, "traveler," moves with the order to the shipping department. A second copy is for production control's scheduling section and the third copy is retained in the quality assurance area.

It took us about one year to move from conception to implementation. Coordination and detailing of forms design and development spanned approximately six months.

Using the on-line system, operators can now enter order scheduling information on CRTs.



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Plotter-Produced Maps Aid Police by Pinpointing Crime

By Tim Scannell
CW Staff

KANSAS CITY, Kan. — Police here have replaced pushpins with computer-generated maps in their efforts to spot potentially troublesome areas and keep abreast of criminal trends.

The maps, produced by a plotter that is driven by a medium-scale system, show the exact location of every crime and automobile accident in the city. Police commanders use the drawings to look for crime patterns and draw up manpower and patrol schedules.

Under the previous "pin-mat" system, "everybody got different colored pins that were stuck into a map on the wall" to mark the scene of a crime or an accident, according to Police Lt. Paul Hornbeak, commander of departmental data systems. This manual system, however, was plagued with inaccuracies and subject to "the forces of gravity," Hornbeak said.

The plotter system, operational since Jan. 15, 1977, is centered around an IBM 370/145 located outside the police department. The computer, linked to the police station via an on-line terminal, is mainly used by the county for tax records and city administration.

The validity and accuracy of the mapping system depends upon "the guy in the street," the police officer himself, Hornbeak stressed.

Data supplied by the various policemen on patrol and at the scenes of crime is collected and written onto dispatch cards, then fed into the mainframe through an IBM terminal. The 370/145 categorizes each incident according to the type of crime, location, severity and time of occurrance, then transfers the information to magnetic tape.

The tapes are used to guide a California Computer Products, Inc. 936 plotter located at the city planning department. The Calcom plotter draws the street network for particular sections of the city or the whole city, if necessary.

Each incident is assigned an identifying symbol and plotted on the map, usually "within 50 feet from where it was actually reported," Hornbeak said.

Natural boundaries such as lakes, rivers and creeks are also outlined on the finished map.

Drawings Circulated

The plotter-produced maps are reproduced on typewriter-size paper and circulated to members of the department. Drawings are updated once each month.

"We feel that with maps going out to the guy on the street, he'll have a better viewpoint of not only what's going on at his location, but also of the adjoining districts and the district across town," Hornbeak said.

The maps also help to plot criminal patterns and activities, he added. "If we wanted to illustrate the correlation between aggravated assaults and homicides, I can run that through and it would show the location of that particular kind of incident," he stated. "If I wanted to, I can generate one map for several crimes, plotting the location of each one."

If a pattern did exist, "it would stand right out at you," and the police might be able to predict where a criminal would strike next, Hornbeak said.

Before heading the data systems section for the police department, Hornbeak had no exposure to computers or graphics. He told programmers from the city planning department what was needed to facilitate crime prevention and they, in turn, supplied the technical expertise.

Although the system is only a little over a year old, Hornbeak already has plans for expanding its use into other areas. In the city's traffic enineering department, for instance, his maps could be used to substantiate or refute a request for something as simple as the installation of an additional stop light.

"If people say their particular block has been subject to an unusal amount of traffic accidents, we can show them in fact, if it really has" or if their claim is an exaggeration, he said.

Also, "if the mayor or crime prevention unit goes out to present a program, we can supply them with a map and data" to illustrate the area they are discussing, he added.

Photos of two police officers are superimposed on a map produced by a plotter driven by a medium-scale system. The map shows the exact address of every crime and automobile accident in Kansas City and helps police spot trouble areas and crime trends.

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System Gives Central Access, Security Control

CHATSWORTH, Calif — A central control access and security system capable of providing visual or printed recall or both entered and acquired data is being offered by Greer Hydraulics, Inc.

The Programmed Access/Security System (Pass) displays in detail the corrective action to be taken in cases of unauthorized intrusion or environmental equipment malfunction and then assures that such action is taken, a spokesman said.

The heart of the system is the firm's Cardkey Interrogator 880 microprocessor that works in conjunction with a dedicated computer system. Security cards are used to access the system, with all transaction data formatted and sent to the processor for sorting and recording on storage disks for later retrieval, according to the spokesman.

Pass allows for the investigation of card transactions as they occur, changing of an employee record, adding new employees to the file or performing a search by using the associated CRT display, the firm said.

The actual location of an alarm condition or the exact whereabouts of employees who have passed control points can be displayed on the video screen in the event of an accident or emergency, the firm noted. Personnel access can also be regulated at up to 128 separate and remote locations within 1-1/2-mile radius of the central controller — or at any distance through the use of telephone lines, the firm stated.

The price of the basic system, including the 880 microprocessor, dedicated computer, card reader, graphics display, alarms and programming, is in the range of $25,000 to $40,000, according to a spokesman. The Cardkey Systems division of Greer Hydraulics, Inc. is at 20339 Nordhoff St. Chatsworth, Calif. 91311.

Products Aid Site Cleaning

PARAMUS, N.J. — HGH Industries has introduced two products designed to aid computer maintenance and contamination control within the DP environment.

Power Duster is an aerosol-propelled, compressed gas contained in 16-oz. disposable cans. The cleaner is nonflammable, nontoxic and noncorrosive and is compatible with most materials, a spokesman said. It sells for $24.75 per box of 12 cans.

Disc Wipe is a "waffle-like" cloth impregnated with 91% isopropyl alcohol. Packaged individually, it reportedly removes residues from disk surfaces with no adverse effects.

In boxes of 100, the cloths are priced at $11.75 from the firm at P.O. Box 313, Paramus, N.J. 07652.

Course to Cover Staff Relations

NEW YORK — A five-day course designed to improve communications and develop better coordination between management and staff personnel will be offered by the American Management Associations on March 27-31 in Chicago.

The seminar will focus on such topics as managing time more efficiently, resolving corporate conflicts, coping with change and supervising minority workers, a spokesman said. The format of the course will be a combination of lecture and participating during which participants will work in small groups and be asked to evaluate one another's performance, he noted.

The course will be repeated in New York on April 3 and in San Francisco on April 24. Price for association members is $505, nonmembers will be charged $580; team discounts will be available for larger groups. Information can be obtained from the group's headquarters at 135 W. 50th St., New York, N.Y. 10020.

Silencer Encloses Teleprinter Units

LOS ANGELES — The TMS 1111 is a silencer enclosure for Teletype Corp. 33 ASR and Telex Corp. 32 ASR machines distributed by Telex Marketing Co.

Complete with buit-in fan, the TMS 1111 is reportedly designed to fit the contour and noise output of teleprinter machines. Features of the TMS 1111 include installation without special tools or fasteners and unimpaired machine visibility through a hinged plexiglass lid, the company said.

The TMS 1111 costs $359.50 and is available from Telex Marketing Co., 6464 Sunset Blvd., Los Angeles, Calif. 90028.

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Key-to-Disk Units Found Most Reliable

By Frank Vaughan
CW Staff

CHERRY HILL, N.J. — "Overall service and manufacturer support continue to be weak areas. Users are advised to particularly consider manufacturer capability in these areas," according to the Fifth Annual Survey on Data Entry Equipment, part of Management Information Corp.'s *Data Entry Awareness Report*. The survey included more than 500 users with more than 760 pieces of equipment.

Equipment reliability is consistently above satisfactory level in the key-to-disk category, while the worst reliability problems are to be found with the keypunch equipment, the report noted.

Four key-to-disk systems were given outstanding ratings in the survey: Pertec Computer Corp.'s CMC 18; Inforex Corp.'s 1301/1302; Univac's 1900; and General Computer Systems' 2100. IBM 3741 and 3742 key-to-storage units gained the top ratings in that category, and the firm's 3270 polled the best responses in the alpha-numeric display terminal grouping.

Recognition Equipment, Inc.'s Input 80 was rated as the top optical reader and there were no outstanding ratings in the keypunch and key-to-tape categories.

The survey also found that there is a growing trend toward the decentralization of data entry departments and that the data entry function is starting to contain more of the data preparation function.

Companies tend to be lax in making complete equipment evaluations, the report claimed.

The report is available for $4.50 from MIC at 140 Barclay Center, Cherry Hill, N.J. 08034.

Data Entry Dimensions

Meter Warns Of Temperature, Power Changes

WYNCOTE, Pa. — A temperature/-power meter that issues a warning signal in the event of a power interruption or extreme temperature change is available from Mack Electric Devices, Inc.

The R-2-B monitor signals with an audio/visual alarm when a power failure occurs, a spokesman said. Built-in, rechargeable nickel-cadium batteries power the unit when the normal source fails, he stated.

The unit also employs a mercury thermostat sensor allowing for direct continuous testing of liquid or air temperatures, he added. If a dangerous temperature is reached, a visual signal changes from green to blinking red and a high-pitched alarm sounds, the firm noted.

Optionally available remote monitors can be located up to half a mile away for dual-location temperature surveillance, the firm said.

The R-2-B is priced at $233.30 from Mack Electric Devices, Inc. 211 Glenside Ave., Wyncote, Pa. 19095.

Companies Offer Free Literature

The following firms are offering free brochures:

A four-page brochure entitled "If You've Ever Misfiled a Tape," describing a prepackaged, prenumbered tape identification system, is available from Tab Products Co., 2690 Hanover St., Palo Alto, Calif. 94304.

An eight-page publication from the Pertec Computer Corp. details the firm's line of flexible disk drives. The booklet can be obtained from the company at 9600 Irondale Ave., Chatsworth, Calif. 91311.

A booklet entitled "Computer Power Protection: An Introductory Guide," explaining the various alternatives to power protection and listing different types of power problems, is available from Atlas Energy Systems, 9457 Rush St., South El Monte, Calif. 91733.

A pocket card that lists the speed and price range of Micro Networks Corp. analog-to-digital and digital-to-analog converters, amplifiers and data acquisition systems is available from the firm at 324 Clark St., Worcester Mass. 01606.

A six-page, illustrated digest detailing Cramer reset, elapsed, interval, cycle and solid-state timers as well as AC and DC instrument and timing motors is available from the Cramer Division, Conrac Corp., Old Saybrook, Conn. 06475.

Printronix Lowers Line Printer Price

IRVINE, Calif — Printronix, Inc. has announced a price reduction for its Model 150 impact matrix line printer/-plotter.

The single-quantity price for the 150 will be reduced 10% from $4,000 to $3,600, a spokesman said.

The reduction will apply to all units shipped or booked Feb. 1 and thereafter, the firm stated.

Involved With Exceptional Kids

Mini Spreads Data for 'Dedicated' Group

By Esther Surden
CW Staff

RESTON, Va. — Getting accurate information about handicapped and gifted children to the teachers of those children has always been a difficult task. But with the help of a modular in-house minicomputer, the Council for Exceptional Children (CEC) here is doing just that.

CEC is an international organization dedicated to disseminating information about exceptional children. Until late 1969 it was a division of the National Education Association (NEA), Demos Georganas, DP manager, recalled.

When it broke away from the NEA, CEC placed much of its DP work in the hands of service bureaus.

But the group's DP workload kept growing and CEC didn't have control over the way the service bureaus were developing software. Any special variations on the software CEC requested were performed at premium cost.

CEC was "caught in the old crunch," Don Foulk pointed out. Foulk is a consultant with Xicron, Inc. who is working on the software development of CEC's current in-house system.

Modular Solution

The only way to bring costs under control and gain more responsiveness to its needs seemed to be an in-house system.

CEC looked at the hardware on the market and almost settled on a Data General Corp. Eclipse system until it found a system from Digital Systems Corp. (DSC) called the Galaxy/5. Impressed by the system's modularity and its ability to accommodate growth, the organization ordered it for installation in January of last year.

The system's modularity combined with the vendor's responsiveness has kept CEC happy with its system. Foulk noted DSC has offered an upgrade to the CPU for $1,500 that increases its speed by two and a half times.

The vendor is also offering users an upgrade to the direct memory access (DMA) feature that will increase the speed from 30- to 200 Kbyte/sec, he said.

The DP work done by the council falls into three categories: a membership application, publications application and general accounting.

Under the membership application, CEC maintains the names, addresses, renewal dates and types of membership of each of its members. It keeps files on about 65,000 active and 15,000 inactive members.

The application also keeps track of almost 15,000 interested nonmembers who subscribe to its services.

The application produces labels, renewal notices, membership cards and roster listings for the chapters throughout the country. It also takes care of rebating some of the membership money collected centrally to the chapters and federations.

(Continued on Page 88)

MIC Survey Finds Users Satisfied Despite Service, Support Gripes

CHERRY HILL, N.J. — Although service and support remain the "Achilles heel" of the small business system industry, most users of those systems are apparently satisfied with their systems, according to a survey conducted by Management Information Corp. (MIC) here.

Some 298 users of 454 small business systems and 912 peripheral devices rated the systems on a scale of 1 to 4 the highest, on performance reliability, ease of use, service and manufacturers support.

Of products receiving five or more responses, Basic/Four Corp.'s systems, Hewlett-Packard Co.'s 3000 series, IBM's System/3 and System/32, the Microdata Corp. Reality, Qantel Corp.'s systems and the Wang Laboratories, Inc. 2200 received an average rating of 3 or more in every category.

In the peripherals area, users gave grades of 3 or above to Burroughs Corp.'s disk and printer, Business Systems Technology's add-on memory, Centronics Data Computer Corp.'s printers, Decision Data Computer Corp.'s 9600 series, HP's magnetic tape drive, Memorex Corp.'s disk, Microdata's CRT, Qantel's CRT and Wang's 2216/17 CRT/tape peripheral.

Some users expressed concern over their vendor's support. Of systems receiving five or more replies from users, the Datapoint 2200 with a rating of 2.4 and the Data General Corp. Nova with a 1.7 rating were graded lowest by their users.

No system with more than five users received less than 2.5 rating for service, indicating an improvement in this area.

Software Better

MIC also asked users to rate software and media and supplies. "Overall, the ratings for software companies improved over last year's survey, although the results were still disappointing. Even though less than five respondees used most packages, overall ratings were less than satisfactory for most companies," the survey report said.

In the media and supplies arena, only one supplier with five or more replies — Control Data Corp. — received a 3 or better rating in all categories. Users rated the media and supplies on performance, company service and relative cost.

MIC would like more users to participate in its survey by completing a questionnaire. All users who return completed questionnaires will receive a free copy of the February 1978 issue of *Small Business Computer News* with this year's survey results, MIC said from 140 Barclay Center, Cherry Hill, N.J. 08034.

Replaces 'Unorganized System'

Door Maker Closes Orders by Mini

By Ann Dooley
CW Staff

TORONTO — The largest manufacturer of wooden doors in Canada is using a minicomputer system to open and close product orders faster and more efficiently.

In fact, Premium Forest Products, Ltd., was the first Canadian user of Computer Automation, Inc.'s Syfa minicomputer system, according to DP manager Paul Spears. "We were guinea pigs, but it's worked out well for us," he said.

Two and a half years ago, Premium Forest decided to automate its "unorganized manual system" and looked at systems from all of the major companies. The decision was finally made to go with CA after one of the door manufacturer's largest customers recommended that vendor, Spears said.

For six months, the system ran parallel with CA's system in California. Now on its own, it handles inventory control, order entry, accounts receivable, invoicing, credit entry and sales analysis for 4,500 standard products and a variety of special design products.

Merchandise pricing is also automated except for special items, which are handled manually. The company plans to add payables and raw materials applications to the system soon.

The large number of products made by Premium Forest complicates the manufacturing process

(Continued on Page 88)

Schlage System Covers All Exits

SUNNYVALE, Calif. — Schlage Electronics has an access control system based on Digital Equipment Corp.'s PDP-8A minicomputer that provides access control for up to 256 doors.

The system uses a sensor to read a command card and transmits signals to the minicomputer, which regulates access. Access can be controlled by command key, access level or time, the firm said.

Management can monitor the status of any point through a CRT terminal that displays data transactions.

The price of the system starts at $40,000. Schlage is at 1135 E. Arques Ave., Sunnyvale, Calif. 94086.

Door Maker's Mini Enters, Closes Orders

(Continued from Page 87)

and also creates a difficult price scheduling problem, Spears said.

"This is a very complex manufacturing environment and it was not easy to computerize," he added, but it's worked out very well.

There have been very few problems with the system, Spears said. The only real problem occurred when dirt and sawdust from the adjacent warehouse got into the computer center and clogged up the disks.

CA cleaned the disks and replaced the disk platter unit, and the system was back in business, Spears recalled.

The system has enabled the company to get invoicing done much faster and has cut down on overstocking of finished goods in the warehouse through inventory control, Spears noted.

Very little training was required to operate the system, so some people were taken off other jobs and moved around, he said.

Although two additional people were hired to help with the work, the system has saved money because of the speed and efficiency with which the work is done, Spears said. The system handles approximately 200 orders daily amounting to a total of nearly 5,000 doors.

Order Entry System

The system includes an LSI2 standalone minicomputer with 64K memory, 20M bytes of disk storage, six CRTs and two printers. It is valued at approximately $100,000.

When customer orders come in, they are coded and a computer operator enters the orders via one of the CRTs. The information is then stored until printing time, which occurs twice daily.

After printing, the orders are taken to the warehouse and checked for errors or out-of-stock merchandise.

The orders are filed until shipping time, when they are filled and sent to the customer. One copy of the invoice goes to the customer and another is kept at the central headquarters for filing purposes or to keep track of any back orders.

The order invoice includes the customer code, product code, comment lines for any specifications, order date and expected delivery date.

The customers appreciate the system, Spears said, because they get their orders faster and can also see exactly what they owe with the open-item system of invoicing.

The system provides a report on the daily total of doors booked, sold and credited. The sales record breaks the products down into 60 product lines judged according to the thickness and type of door.

A monthly sales analysis is also run; this breaks down sales information by customer, product group, area, salesman or by what the major buying groups are ordering.

System Helps Dedicated Group

(Continued from Page 87)

The publications application is really an order processing system that handles orders received in cash or credit, credits them against a contract, adjusts inventory and produces packing lists or invoices. This system also takes care of back orders and aging of accounts.

When the system was installed, it included one CPU with 96K bytes of memory, two disk drives and a 600 line/min printer. It has since been upgraded in 32K-byte increments to 128K bytes of memory and another 16K bytes are on order.

Originally configured with five terminals, the system now has eight and "another half dozen" should be online by July, Foulk said.

With the DSC system, CEC will be able to add another CPU when it needs it. In fact, "we'll probably get a second CPU for a text processing application," Foulk noted. This will allow the organization to retrieve abstracts dealing with various subjects by various word searches, he explained.

"We can add up to four CPUs to the system," Foulk pointed out. If two jobs are trying to use CPU time and one of the CPUs is busy with the first job, the job attempting to get time will automatically go to the second CPU, he noted. "Programming is not dedicated to any particular CPU."

CEC did feel some concern about being only the third installation of a system by Digital, but those fears were allayed by several factors. All of the components used by the vendor are "off the shelf" so that the organization could get replacements if necessary, he said. "Our biggest concern was software support. They have been very responsive in some areas," he noted.

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System Helps Bottle Company Perfect Designs

MONTREAL — When Domglas, headquartered here, had designs on better ways to produce bottles, the firm looked to a minicomputer-based turnkey system to satisfy its needs.

In six plants from Quebec to British Columbia, the firm turns out bottles in myriad shapes and sizes for the food, beverage and chemical industries.

According to Hans J. Kleiner, assistant to the manager of mold design and manufacture, the firm, whose sales reached $185 million in 1977, needed some way to better design both its glass products and the mold equipment used to produce the products.

"We were looking at some way of reducing costs by either reducing manpower or increasing productivity, and we also wanted to improve the accuracy of our mathematical calculations," he noted.

The company had surveyed the various systems available before settling on a drafting and design system developed by Information Displays, Inc. (IDI) of Elmsford, N.Y.

Most of the graphics systems available used storage tube technology, Kleiner noted, which is inadequate for the firm's usage needs. When the designers tried the storage tube systems, they found that the screens were cluttered and features such as selective erasure were not available. "Those systems were just too hard to work with," he pointed out.

With a refresh tube-based system, the designers could design, redesign, erase and make changes at will, he said.

The system represented a total initial investment of $250,000 for the firm, but benefits should outweigh the costs. For example, to the company's knowledge, it has achieved 100% accuracy in volume calculation and mathematical formulation of bottle geometry and a substantial reduction in design-to-manufacture time, he said.

The system performs three basic applications which were all provided by IDI — volume calculations, design proportioning and molding design.

Using the volume calculation program, designers can find calculations for any shape bottle or any configuration. "It was the general belief in the glass industry that there was no way to automate the calculation of off-round shapes with acceptable accuracy and at reasonable cost," he said.

The design proportioning application allows the company to configure families of bottles both larger and smaller than the original container. The program takes care of the calculations needed to come up with the similar designs, Kleiner pointed out.

With the mold design system, Domglas can use the same machinery to produce all kinds of containers simply by changing certain variables.

Light Pen Used

With the IDI system, the operator works on the face of a CRT with a light pen, as he would with a pencil on a piece of paper. With the light pen, he can activate any of many drawing functions shown on the screen on both sides of the actual drawing area.

When a design is completed, a hard copy is made on a flat-bed plotter. For temporary storage, a mass memory with a capacity of over 3,000 drawings is used. Permanent storage is on magnetic tape.

Saw Maker Sees Control in Mini-Based System

By Esther Surden
CW Staff

CHEHALIS, Wash. — When Stihl Northwest saw its bookkeeping machine was unable to control the inventory and sales aspects of its business, the firm switched to a minicomputer-based system to do the job.

The chain saw distributor considered the Singer System Ten and the IBM System 32 as well as the NCR Corp. 8200 system before finally selecting the NCR 8200. "We felt it had the most potential to help us keep in touch with our business minute by minute," Larry Robertson, the firm's DP manager, recalled.

The System/32 was too much of a batch machine and Singer Business Machines went out of business just before Stihl made its choice, he added.

NCR put the firm in touch with CMI Systems, Inc. of Renton, Wash., and Stihl looked at the software CMI had written on systems that were in operation. Those systems appeared to be running well, so the Stihl went with the software house.

Inventory On-Line

Stihl's system was installed a year ago; three months later, the firm was up and running. About 60 programs written in Cobol are used on the 80K 8200, including an on-line inventory system that allows the company to track accounts receivable, sales, inventory and order entry.

"We are presently building our accounts payable and general ledger systems," Robertson noted.

All of the initial programming for the system was done by the CMI, but Robertson made some slight modifications to the programs. The system is run by an operator, but is easy enough to use that anyone with typewriter and keypad experience could run it, he said.

The 8200 has been very reliable, notwithstanding a slight problem Stihl had when it was first installed, according to the DP manager. NCR's service was termed "quite responsive," although Stihl does have to wait the full four hours for a service person because it is located in a remote area.

Herd of Minis to Track Cattle Disease in Australia

CANBERRA, Australia — The Australian Bureau of Animal Health has begun developing a national animal disease information system based on 20 minicomputers.

Upon implementation, the system should be a factor in the eradication of brucellosis in cattle, protecting Australia's international markets for beef and dairy products. Brucellosis is an undulant fever — a long-persisting bacterial disease characterized by fever, profuse perspiration, pain, swelling in the joints and an enlarged spleen.

Success in eradicating brucellosis at the planned rate should ensure Australia's continued access to international meat markets in the 1980s and 1990s, according to a bureau spokesman. However, if the program falls behind, Australia could be shut out of the U.S. market in the 1980s because the U.S. is nearing the end of its own brucellosis eradication program.

The benefit of the eradication program has been estimated by the Australian Industries Assistance Commission to be $543 million.

The 20 Data General Corp. minicomputers, valued at about $500,000, are presently being installed at veterinary diagnostic laboratories throughout Australia.

The main task in the eradication program is the analysis of between 10 million to 20 million blood samples per year, collected from farms and abattoirs. The resulting information will then be processed on the systems.

Reports produced by the minis will reportedly enable greater accuracy, speed and efficiency in decision making about individual herds by field veterinary staff.

The system also will collate all the data for an area — on a district, regional, state or national basis — informing administrators of progress with the eradication program.

One Nova 3 already installed in Canberra will keep records on all herds in Australia as backup storage to make sure no records are lost.

Dr. R. Morris, assistant director of the Bureau of Animal Health, said the decentralized approach adopted for the disease information system makes the system more useful to staff in the field than centralized systems. It encourages the involvement of staff, particularly because the system was designed for operation by people with no minicomputer experience.

The bureau, after careful evaluation of a range of equipment, decided on minicomputers and disk-based systems with diskette transfer of data between sites, Morris said. Each configuration includes 10M bytes of disk storage and a floppy disk, with a 60 char./sec terminal printer and additional asynchronous communications line.

User Tries Again, Finds Success With Turnkey

By Esther Surden
CW Staff

N. HOLLYWOOD, Calif.— Although its first attempt at using a minicomputer was unsuccessful, Specialty Coatings & Chemicals, Inc. here tried again — and when it did, it found the right equipment could be cost-justified many times over.

According to Henry C. Jacoby, president of the company which manufactures industrial finishes and chemicals, Specialty faced a serious problem before turning to its first system.

"Our pricing structure is quite complicated because we sell to jobbers, distributors and a network of 5,000 dealers. Before we decided to try a mini," Jacoby recalled, "our office staff of six full-time people had to contend with a maze of prices and discounts, resulting in many billing mistakes, and sometimes handwritten invoices."

Bills Paid Late

"What was worse," he added, "we had no standard formula for costing, and we later found that with the cost of raw materials rising so rapidly, we were selling some items actually below what they were costing us to make them. Our bills were frequently being paid late."

The company also kept a 30,000-name mailing list of prospects of "Scriptomatic equipment," he said. All mailing was hand-sorted.

No Luck on First Try

The firm decided to lease an NCR 399 system to help cope with its problems. "After eight months, we still did not have half the programs operating on it," Jacoby said.

The system had no CRT screen and the users had to constantly refer to the manuals to see what they were doing wrong. "It was an obsolete system and difficult to train operators to use," he concluded.

After falling further behind on its correspondence, invoicing and other work, Specialty once again began a search for a solution. It contacted Mini-Computer Business Applications, Inc. in Los Angeles, a supplier of turnkey small business systems.

Vendor Recommendation

The vendor recommended a Digital Equipment Corp. Datasystem 310; Specialty took its advice and within six months was caught up on its work, Jacoby said.

The system is simple to operate because the users are prompted step by step, he noted. Jacoby has learned how to make programming modifications himself, he pointed out.

Office Staff Cut

With the system, "we've been able to reduce office staff to four full-time and one half-time people, down from six people," Jacoby added. The statements are cleaner, information is available and the company's image has improved, he added.

The system is running billing, invoicing, order entry, accounts payable, accounts receivable, formula costing, payroll and some simple word processing applications.

The mailing list application has also been put on the system, allowing Specialty "to achieve greater contact with prospects through more frequent and more specialized mailings," Jacoby said.

However, there is one drawback to Specialty's system, Jacoby reported. The number of terminals the firm can attach is limited, so Specialty is going "to a bigger system" with software being written by the same vendor.

"We wanted two stations" and greater disk capability, he explained, so the firm is switching to a Data General Corp. CS/40 system.

The turnkey vendor has been excellent throughout the decision to switch systems, Jacoby said. "It actually purchased it back from me," he noted.

The fact that the vendor stands behind the system it sold gives Specialty a great deal of confidence, he added.

Printer Designed For Documents, Stiff Passbooks

MT. LAUREL, N.J. — Okidata Corp. has introduced the CP210 Model III, a document/passbook printer designed for use in small business and remote terminal applications.

The unit incorporates a microprocessor-controlled interface that allows a document to be positioned up or down in increments of less than one line, assuring accurate positioning of the printed line on documents without uniform line spacing, the company claimed.

Other Features

Other features are said to facilitate manual loading of documents, permit use of stiff passbooks and provide automatic positioning.

Accepting forms, documents and passbooks from 2 1/2- to 8 in. wide and from 2-1/2- to 30 in. long, the printer will also accommodate single and multipart forms and both horizontal and vertical fold passbooks.

The Model III costs $2,365 without a journal option or $2,625 with the option, Okidata said from 111 Gaither Drive, Mt. Laurel, N.J. 08054.

Authorization System 100% Reliable

Dual Processor Keeps Card Checker Working

LAKE SUCCESS, N.Y. — When consumers want to use their credit cards, business establishments must check to make sure the card's use is authorized. The systems performing the checking have to be available and reliable.

Eastern States Bankcard Association (Esba) chose a dual-processor minicomputer to field the constant flow of inquiries that come into its headquarters here. "We have to maintain virtually a 24-hour uptime service in our teleprocessing network," Claude White, Esba's manager for software development said. "We cannot tolerate downtime."

The Tandem Computers, Inc. dual-processor system is being used as a front end to an IBM 370/158 mainframe, which in turn is backed up by an identical mainframe. The mini, which White calls his "traffic cop," routes incoming requests for credit on Master Charge and Visa cards to the right mainframe for processing.

100% Availability

Authorization requests are routed by the Tandem system to the host 370 if the card is one issued by one of the 310 Esba banks. Otherwise, the request may be routed to one of the other seven Master Charge associations in the Northeast or to the central Master Charge switch in St. Louis.

In addition Visa inquiries are sent over dedicated telephone lines to Visa USA, Inc. in San Mateo, Calif.

"Thus far the Tandem dual processor system, which has been in use here for about a year, has demonstrated an availability of virtually 100%," White said.

The mini system can handle all credit authorization inquiries by itself should the IBM system or host communications lines fail, he added. In that event, the Tandem system refers to its own disk files that contain a list of delinquent accounts and other "bad guys."

These so-called "negative files," updated each morning with magnetic tapes generated on the IBM system, permit the system to field the incoming calls independently until the problem with the rest of the system can be cleared up.

White said he had needed to use this backup capability and it "worked just fine."

Although the mainframe could perform its own switching with its own front end, according to White, it's easier to have the mini system do this job since it adds further assurance of system availability.

System in Action

The Tandem architecture is quite different from conventional computer systems, White noted. The central processors, of which there can be up to 16, are all interconnected through a dual communications path.

If a specific processor should malfunction, another assumes its duties, without operator intervention. Repair can be made while the system is operating. Dual communications paths between the processors and the peripherals help assure the availability of the peripherals.

The Esba system begins work when a member merchant telephones the association and tells the terminal operator the account number of the person desiring to charge something. This number is keyed into one of the 80 terminals connected to the minisystem.

The system then routes the communications to the appropriate mainframe by referring to a lookup table in memory based on account numbers. If the number corresponds to a member Esba bank, the inquiry for credit authorization is sent to the local 370/158.

If for some reason the line is not available, the Tandem refers to its negative file disk for a determination, reporting back to the terminal operator's CRT screen.

The dual-processor system includes two 50M-byte disks and internal memory of 256K bytes each. The two 370/158s are usually arranged with one on-line and the other off-line, although the two can be used to backup each other.

One single data file accessible by both systems containing some 2.3 million records are stored in disk rotating memory.

The 370/158s are primarily used to service the member banks with financial reports, on-line account data entry and inquiry, monthly statements for each account and other information pertaining to Master Charge and Visa.

A data base management package which is used to access the negative files and to write the transaction files, was supplied by Tandem, along with a basic operating system and other interface software for connection with the 370.

Esba, assisted by Tandem, has developed application software that allows more comprehensive message switching.

A private association of banks in the Northeast, Esba includes banks in New York, New Jersey, Pennsylvania, Delaware and Connecticut.

With the number of transactions now running at about 20,000 per day, Esba plans to add a third processor to the miniconfiguration soon.

Distributor Expands Line

Beer Seller Gets Ahead With Mini

Special to CW

DOVER, N.J. — When a beer distributor here decided it was time to add a new line of brew, it turned to a minicomputer to deal with the expected volume of paperwork.

As a result of the installation of the small system, the firm reduced errors, cut the time it takes to route trucks and substantially improved its collections procedures.

About two years ago, American Corp. bought out half of another beer distributor to gain the Schlitz/Ballantine portion of the distributorship, according to Alan Chernotsky, owner of the firm.

"With the increased business we expected from the new line, we just didn't feel we could handle the increased paperwork," Chernotsky said. "We had 425 customers two years ago; now we service 750."

Increased Business

According to Chernotsky, the increase in business would have been too much for his 22 employees, who include drivers, warehousemen and clerical support. "I knew we needed some kind of automatic processing," he said. "We looked at striped ledger systems and mechanical bookkeeping machines, but they didn't do half the job we needed done.

"Then we looked at computers. I guess we must have looked at 10 different kinds. Most of them didn't have much software, and the ones that did had canned software packages which the companies refused to modify."

Good Example

Chernotsky said he first heard about his present system, a Wang Laboratories, Inc. WCS-30, through an advertisement. When he investigated, he found that while no software existed for beer distributors, a system performing inventory, invoicing and cash receipts operations similar to what he needed was installed at a nearby fuel oil dealer.

"To me, this was a good example of the kind of a system I had been looking for," he noted. "Everyone else I talked to said their systems did these operations perfectly, but nobody could show me any installations."

Chernotsky uses his system to manage order entry, invoicing, sales analysis and truck routing.

Confident that the system could handle the increased paperwork, Chernotsky decided to purchase it before he added Schlitz and Ballantine.

"I wanted to have our system up and running beforehand," he said. "I didn't want to be in the position of converting all our records over to the system at the same time we were trying to add a new line. That would have been absolute chaos."

Contracted With Programmer

Contracting with a programmer, Chernotsky was able to develop programs defined to his requirements and tailored to his needs.

His list of applications includes order entry for new sales; route assignment for his 11 trucks; a daily sales journal and summary; daily cash receipts; an inventory report, including a value report; an aged accounts receivable, payroll and accounts payable; and a sales analysis by salesman, customer or product.

The system also delivers complete accounting functions from cash disbursements to general ledger and all journals.

Duplicate Files

Chernotsky knew he would have to transfer all of his files from his manual system to the computer; during the process, he had to run duplicate files for two months. But he turned the situation to his advantage, he said, by updating all customer files as they were entered into the system.

"My salesmen made up slips for each customer to get records up to date. Now I won't let a file get out of date, and I have my operators make any changes on the spot," he added.

Because errors are reduced, the firm no longer wastes manpower and postage sending corrections to customers. Truck routing that used to take four people all day can now be accomplished by one operator in under two hours.

The largest advantage Chernotsky reported was improved collections. "Because my system provides accurate aged balances, I know immediately all receivables over 30 days and I have increased collections substantially.

"Also, the New Jersey Alcoholic Beverage Commission requires a statement of all customers with billings over 30 days, and now I can print it out daily without any hassles," he added.

Micro Bytes

I/O Board From Infinite Compatible With S-100

MELBOURNE, Fla. — An I/O board with 128 bytes of random-access memory, a serial port with switch-selectable data rates up to 19.2 kbit/sec and S-100 bus compatibility has been introduced by Infinite, Inc.

The MFIO-1 board features an 8-bit parallel input, a switch-selectable cassette interface with data rates from 300- to 2,400 bit/-sec and two IBM 2708-type erasable programmable read-only memory sockets, a spokesman said. The strucure of the unit allows up to 2K bytes of program storage for system bootstrap, monitor and utility routines, he added.

Total power requirements are less than 1A, and a 21-command, two-chip monitor program is available in programmable read-only memory as an option, the firm said.

The board costs $282 assembled, $234 as a kit and $49 for a bare board from Infinite, 1924 Waverly Place, Melbourne, Fla. 32901.

Temperature Sensor Offered

NORWOOD, Mass.— Analog Devices, Inc. is offering a two-terminal temperature sensor that is reportedly capable of producing an output current proportional to absolute temperature when driven by a direct current supply voltage between 4V and 30V.

The AD590 is capable of achieving 1°C accuracy over a -55°C to 150°C range, a spokesman said. Power requirements for the device measure 1.5mW with a 5V supply at 25°C, keeping sensor self-heating effects to a minimum, he claimed.

The AD590 is available in three models. The "L" version is calibrated to 1°C at 25°C with a 1°C linearity over the range of -55° to 150°C; the "K" version offers a 2°C calibration and a 2°C linearity; and the "J" model features a 5°C accuracy with a 2°C linearity, the firm said.

The prices of the three versions are $1.95 for the J model; $3.95 for the K; and $7.95 for the L from Analog Devices, Rte. 1 Industrial Park, P.O. Box 280, Norwood, Mass. 02062.

RAM Replaces SBC 8010

WALTHAM, Mass. — GSI Systems has introduced a 64K random-access memory (RAM) board that it said is capable of replacing four Intel Corp. or National Semiconductor Corp. SBC 8010 16K boards.

The Model 10046 has an access time of 475 nsec with a 650 nsec refresh rate, a spokesman said. Two serial I/O ports capable of providing RS-232C or current loop interface can be incorporated to permit the board to communicate with various peripherals, terminals and modems, the firm stated.

The board provides all the necessary logic and circuitry to perform accessing, reading, writing, transparent refresh and direct memory access, the spokesman added. It can be driven by any Intel or National Semiconductor 8010 board.

The 10046 is priced at $179 with the 16K version selling for $495 from the firm at 223 Crescent St., Waltham, Mass. 02154.

Rental Equipment Catalogued

BURBANK, Calif. — Electro Rent Co. has an eight-page catalog of nearly 200 pieces of microcomputer and minicomputer development/test equipment that the firm rents.

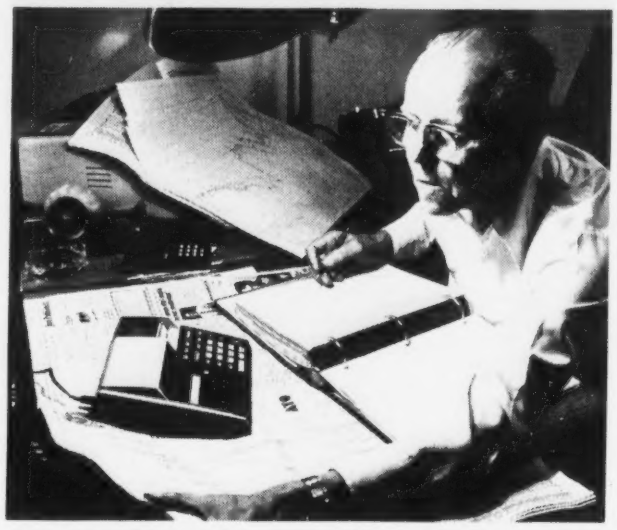
The catalog is available from the company at 4131 Vanowen Place, Burbank, Calif. 91505.

Retiree 'Programs' Hobby Into $30,000/Year Career

SAN JOSE, Calif. — "My former company gave me a retirement program it never anticipated. By using one of its products, I'm making a lot more money now as a retiree than I ever did as a regular old working stiff."

Carrol S. Smith retired from Hewlett-Packard Co.in 1971 at age 65, after working in the corporate training department. The first thing he did with his spare time was fill it with work. He now uses a programmable pocket calculator and a desktop computer to play the stock market.

"I anticipated that retirement would be a shock long before it occurred, what with idle time and the reduction in income. So I made plans to have a new career waiting for me," Smith recalled.



Carrol Smith, 73, has turned his retirement into a second career as a stock market investor.

"The stock market has been an avocation of mine for a number of years and, as a neophyte, I had even made some money. I had also done a considerable amount of reading about the market and even developed some theories of my own. Retirement gave me the opportunity to put these theories to the test."

Smith began his new career with the help of an early HP desktop calculator and an HP 35 pocket scientific calculator.

"Those early calculators were a real asset. The cost of renting a computer would have made such a small operation as mine unprofitable. Yet the equations that I used to predict market activity required far more calculating power than I could do by hand. The calculators made it possible for me to reach my goal," he explained.

Grossing $30,000 Annually

Smith's hobby has grown considerably in the past six years. He estimated that during that period he has moved more than $5 million in and out of the market, yielding an average yearly income of $30,000 — all from an initial investment of about $35,000.

As the scope of his expertise has grown, so

(Continued on Page 97)

Surveyer Uses Micro to Draw Colorful Examples of Its Work

By Tim Scannell
CW Staff

LOS ANGELES — A firm that specializes in the compilation of demographic information in areas ranging from a few city blocks to thousands of miles picked an Intelligent Systems Corp. (ISC) Intecolor 8001 microcomputer to aid in its surveys of population and distribution.

One of the reasons Urban Decision Systems, Inc. chose that particular microcomptuer was its ability to produce displays in eight different colors, according to Jerry Paris, a company official.

Since the installation of the 8001, Urban Decision has saved more than $1,000 each month and is better able to graphically demonstrate its services to prospective customers, Paris said.

Urban Decision receives its demographic information, on a time-sharing basis, from the National CSS, Inc. network, a private data base that is accessible via terminal. The firm conducts surveys on households, income, expenditures and other areas in which census-type information is needed.

Although some of the studies are performed in concentrated sectors of four or five square miles, a number are focused on areas of irregular shapes and sizes.

"People would be giving us more and more 'polygon' [irregularly shaped area] orders," Paris said. "Since our system is driven by latitudinal and longitudinal coordinates, we would have to calculate a separate coordinate for every point at which the polygon would change direction.

"If somebody gave us something like an 800-sided polygon, several man-days would have to be allocated" to perform this task, he stated.

Because of the great amount of time it took to survey large areas and the number of errors experienced with a manual system, Urban Decision decided to use a microcomputer in conjunction with a digitizer to simplify the operation.

"We would just define a single reference point on a map and get the displacement, in inches, using a digitizer," Paris said. "The microcomputer would then translate the coordinates into miles" relative to the area under inspection.

The 64K Intecolor 8001 at Urban Decision Systems, which runs about five hours daily, incorporates an Intel Corp. 8080 microprocessor and a Shugart dual floppy disk drive. It is interfaced to a Science Accessories Corp. Graf/Pen digitizer.

The user is currently under contract with

(Continued on Page 97)

Urban Decision employee keys demographic data into a micro-based system.

INQUIRY — Refers to a technique whereby the interrogation of the contents of a computer's storage may be initiated at a local or remote point by use of a keyboard, Touch-Tone pad or other device.

JACK — 1. A socket to which the wires of a circuit are connected at one end and into which a plug is inserted at the other end. 2. A connecting device to which a wire or wires of a circuit may be attached and which is aranged for the insertion of a plug.

JOB CONTROL LANGUAGE (JCL) — 1. The JCL for modern operating systems may be quite complex and there are probably nearly as many user-prepared jobs which fail to execute due to JCL errors as failures due to compiler language errors. 2. A programming language specifically used to code job control statements.

JOVIAL (JULES OWN VERSION OF IAL) — A language containing facilities for numerical computations and some data processing. Most widely used for command and control applications. A new version of Jovial called Jovial/J73 has been developed; it is expected to become the new standard language for command and control applications.

JUNK — A slang expression that refers to garbled or otherwise unintelligible sequence of signals or other data, especially as received from a communications channel, i.e., hash or garbage.

KEYWORD — Refers to various significant or informative words in a title, abstract, body or part of the text that generally are utilized to describe a document. A keyword or set of keywords may describe the contents of a document, label the document and/or assist in identifying and retrieving the document.

KILOBAUDS — Refers to high capacity data channels. For special applications, some data channels capable of 20 kilobauds have been placed in service.

KILOCYCLE — Abbreviated kc. One thousand cycles per second.

KIT ASSEMBLERS — A typical kit reads a source program from an external device and converts it into binary form in the MPS memory. Input can be read from any device, including the teletypewriter keyboard. A second pass of the source can be made to generate an assembly listing. The assembler itself occupies approximately 3K of memory in some systems.

LEARNER'S LEXICON

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Retiree Turns Hobby Into $30,000/Year Career

(Continued from Page 95)

has Smith's equipment. He has upgraded his desktop calculator to a Wang Co. 720B desktop computer and twice upgraded from his HP 35, first to an HP 65 programmable pocket calculator and recently to an HP 97 programming printing calculator.

"Keeping track of the market requires a considerable amount of charting. Primarily, I'm searching for a number known as the 'relative strength' of a stock. This involves taking the stock price and dividing it by one of the basic market indicators, like Standard and Poor's and Dow Jones, and then using some constant multiplier to give a chartable result.

"The chart describes the activity of the stock in relation to the chosen indicator. From this graphic representation, a knowledgeable investor can locate 'buy' and 'sell' signals. Occasionally, the graph will give you a false signal, but 75% of the time it will be quite accurate," Smith said.

"I use two running stock price averages, one short-term and the other long," he continued. "Where the average graphs cross, they confirm the relative strength signal. Other checks on relative strength are an ongoing record that I keep of changes in the volume of stock sales and a 50-day true running average of each chosen stock.

"Combining all five indicators for just one stock would be a difficult job. Attempting the same operation on the more than 100 stocks I regularly survey would be clearly impossible without some kind of DP," he said.

Smith divides his computational load between the Wang 720B and the HP 97. The 720B handles the large number reduction and processing operations and the HP 97 is assigned the shorter, more flexible programs.

Smith's results apparently have been successful; he and his wife have taken on five cruises in nearly as many years and he has purchased both a mobile home and a truck to tow it.

On each of the cruises, Smith used his calculator as a ticket of admission to the bridge. There he has challenged the ship's computers and books of navigation tables to tests of accuracy. One captain was so impressed, Smith said, that he asked to use the calculator on the bridge for the rest of the trip.

User Gets Graphic Examples

(Continued from Page 95)

the Public Broadcasting System (PBS) to survey specific television viewing areas. "We're highlighting the 'A' and 'B' viewing areas for all the PBS stations in the U.S.," Paris said. "We show the 'A' sectors in one color and the 'B' in another color, and we have a little blinking broadcast beacon representing the location from which the television signal is originating."

The system "is very impressive and, at the same time, it's a real workhorse," he added.

Manuals Inadequate

The system was purchased from a hobbyist computer store at a price "in the vicinity of $5,000." Although it has been relatively trouble-free, there have been a few difficulties, Paris said.

"We had the usual shakedown problems," he recalled. "We had to take it back once because of a problem with the power supply, but the biggest problem we've had was getting information from the manufacturer" concerning the microcomputer's operational capabilities.

"We don't think the manuals are terribly good and I'm sure the manufacturer knows that also," he stated.

"Although our experience has been with a national time-sharing service and we never had a microcomputer before, I feel there's a lot of potential yet that we're just learning," Paris said. "We eventually would like to market some type of system where people would buy a terminal and we would send out signals on the National CSS network providing some type of graphic capability."

Most of the people seeking demographic surveys are responsible for providing support information to management that is used as a basis for decisions, Paris said.

'Speak To Me . . . '

I/O Board Links S-100

WESTLAKE VILLAGE, Calif. — An I/O board that combines two parallel input and output ports and a serial I/O port using an 8251 programmable universal synchronous/asynchronous receiver-transmitter has been introduced by Vector Graphics, Inc.

The Bit Streamer communicates with board circuitry via a microprocessing unit; it was designed to interface to an S-100 bus structure, a spokesman said.

The I/O board costs $155 in kit form and $195 assembled from the firm at 790 Hampshire Road, Westlake Village, Calif. 91361.

HP Adds Books On Calculators

PALO ALTO, Calif. — The Hewlett-Packard Co. has released 10 books for owners of its HP-29C programmable calculators. The books provide solutions to problems commonly found in 10 different areas, the firm noted.

Each of the solution books provides the user with 12 programs that HP selected for their everyday usefulness. A summary of each program, a listing of program steps and an explanation of how the results are displayed on the calculator are meant to allow users with little or no experience to program and operate one of the calculators, the firm said.

The books sell for $7.50 each from HP at 1501 Page Mill Road, Palo Alto, Calif. 94304.

Boards Extend PCM-12 Use

SAN RAMON, Calif. — Pacific Cyber/Metrix, Inc. (PCM) is offering a prototyping board and an extender board for use with its PCM-12 microcomputer system.

The 12090 prototyping board plugs directly into the PCM-12's backplane bus using a standard H322140 edge connector, according to a spokesman. The board will accommodate as many as 40 14-pin or 16-pin dual in-line packages (DIP) and up to four 40-pin DIPs, he stated.

The board can handle either wire-wrap or solder-tail integrated circuit sockets, PCM noted.

The 12190 extender board allows the user to physically extend the bus connections for a given module beyond the card cage area, the firm said. When this is done, the module becomes more accessible with no degradation in system performance, it claimed.

The prototyping board is available for $42; the extender board with connector sells for $43 from the firm at 3120 Crow Canyon Road, San Ramon, Calif. 94583.

System Based On Z80 Micro

HORSHAM, Pa. — A microprocessing system that incorporates the Zilog Z80 microcomputer and features 80K of random-access memory (ROM) was introduced by Digilog Systems, Inc.

The Microterm II package allows the inclusion of a 24- by 80-character CRT, a 2,200 char./sec non-impact printer, single or dual mini-diskettes and two Z80A microprocessors with 80K bytes of RAM capacity, all in one unit, the firm said. The internal printer, dual diskettes and memory expansion beyond 32K are optional features, it added.

The basic configuration with 32K RAM, CRT, dual processor, dual diskettes with 32K RAM and communications interface is priced at $5,920. The internal printer is priced at $1,675 and the 16K memory expansion costs $515 for a single unit from Digilog Systems, Inc., Babylon Road, Horsham, Pa. 19044.

Static RAM Board Fits M6800 Buses

ROCHESTER, N.Y. — American Technologies has introduced an 8K by 8-bit low-power static random-access memory (RAM) board for microcomputer systems utilizing the Motorola, Inc. M8600 bus structure.

The SME6808 is organized as two 4K arrays that can be independently located at any 4K boundary on the 64K addressing range of the system, a spokesman said. Base address selection for each array is made via on-board jumpers, he stated. Switches on the board allow selection of a read-only mode of operation for each of the 4K arrays, permitting the user to simulate read-only memory for software development applications, the firm said.

The memory board operates from a single 5V power supply over a 0°C to 70°C temperature range, the firm claimed. Prices for the board, which come in 500 nsec and 250 nsec versions, are $324.95 and $399.95 respectively, from the firm at P.O. Box 23001, Rochester, N.Y. 14692.

Data Cassette Has Pilon-Coated Pad

GARLAND, Texas — A data cassette with a storage capacity of 50,000 bytes of 30 byte/sec data, developed for the home computing user, has been announced by Percom Data Co., Inc.

The Pilon-30 features a pilon-coated pressure pad that reportedly provides a more uniform tape-to-head contact and eliminates "fiber-lint," a source of drop-out error in audio cassettes, a spokesman said.

Price of the polyester-based tape, sealed in a five-screw housing, is $2.49 in quantities of five from the firm at 318 Barnes, Garland, Texas 75042.

Motorola Adds 4K-Bit RAM

AUSTIN, Texas — Motorola Semiconductor Products, Inc. has announced the availability of a 4K-bit static random-access memory (RAM) that operates from a single power supply and is compatible with transistor-transistor and diode-transistor logic.

The MCM2114 is offered in speed ranges of 200nsec, 250nsec, 300nsec and 450nsec and in two power versions, 550mW and 385mW, a spokesman said. Both use a single 5-volt power supply with a tolerance of approximately 10%, he stated.

The memory features data I/O of the same polarity and operates without clocks or timing strobes, the firm noted.

Price of the unit, in an 18-pin plastic or lid-seal ceramic package, is $12.25 in quantities of 100 from the firm at 3501 Ed Bluestein Blvd., Austin, Texas 78721.

Vista Minifloppy System Designed for Z-80, 8080

TORRANCE, Calif. — Vista Computer Co. has designed a minifloppy disk system for both Z-80 and 8080 microcomputer applications that includes an S-100 bus controller card.

The V80 system includes a minifloppy disk drive with a capacity of 80K bytes, a direct current regulator board for powering the unit from the user's microcomputer, an S-100 bus card that can control up to three drives, a disk operating system and Basic-E compiler recorded on a diskette, I/O cables and hardware and software documentation.

Features of the system include context editing of programs and text, a debugging function, program assembly, batch processing and a file management and storage program, according to a spokesman.

The single-sided disks contain 35 track/side with 2,304 bytes/track, he said, adding the drive has a track-to-track average seek time of 40 msec.

The system is priced at $649 as a kit and $749 assembled from Vista Computer, 2807-FS Oregon Court, Torrance, Calif. 90503.

KIM-1 Offered for Prom Programmer

EARLYSVILLE, Va. — A programmable read-only memory (Prom) programmer for use with MOS Technology's KIM-1 microcomputer has been introduced by Optimal Technology, Inc.

The programmer also contains a verify mode that reportedly confirms that all bits have been programmed correctly, the firm stated.

The programmer, which comes on a printed circuit board, is priced at $59.95 from the firm at Blue Wood 127, Earlysville, Va. 22936.

I/O Controller Goes With Z-80

CUPERTINO, Calif. — A dual-channel, multiprotocol, serial data communications controller circuit designed to work with Z-80 microcomputer systems was released by Zilog, Inc.

The Z80-SIO supports the "daisy-chain" interrupt structure of the Z-80 MPU, a spokesman said. The unit incorporates silicon-gate depletion load technology and each of its full-duplex channels has four control lines for most commonly used modems, he said.

Price of the controller circuit is $54 for a 40-pin ceramic package and $49 for a 40-pin dual in-line package. Zilog is located at 10460 Bubb Road, Cupertino, Calif. 95014.

System Permits Remote ac Control

BEN LOMOND, Calif. — Mountain Hardware, Inc. has unveiled a system that permits control of ac devices remotely from any S-100 bus or Apple II microcomputer over existing 110 Vac wiring.

Introl provides on/off control and status checks at any ac outlet, the firm said. The system impresses a code modulated 50 MHz control on the ordinary ac wiring and decodes the signal at any outlet to switch ac devices on and off, a spokesman stated.

The system includes a controller that can address up to 64 channels and a dual, 500-watt remote unit that attaches to an ac device, the firm noted.

The ac controller costs $149 in kit form and $189 assembled. Remotes cost $99 in kit form and $149 complete from the firm at P.O. Box 1133, Ben Lomond, Calif. 95005.

Analog Devices Introduces 8-Bit CMOS Converter

NORWOOD, Mass. — An 8-bit multiplying CMOS digital-to-analog (D/A) converter with a power consumption of less than 20mW has been introduced by Analog Devices, Inc.

The AD7523 features four-quadrant multiplying and a settling time within 100 nsec, according to a spokesman.

The converter is being offered in three versions: the AD7523JN, which provides a linearity of being .5 least significant bit (LSB); the KN, providing .25 LSB; and the LN, which features a .125 LSB.

All of the units provide a feedthrough of .5 LSB at 200 kHz with a uniformity that is constant over a temperature range of 0°C to 70°C.

The converters are housed in 16-pin plastic dual in-line packages and are priced at $2, $5 and $7.50 for the JN, KN and LN, respectively.

Analog Devices is at Rt. 1 Industrial Park, P.O. Box 280, Norwood, Mass. 02062.

Wintek Cuts Module Price

LAFAYETTE, Ind. — The Wintek Corp. has announced a 62% price reduction on its 2K CMOS random access memory (RAM)/Battery Module.

The price has been lowered from $889 to $349 with 256 bytes costing $129.

Wintek is at 902 N. 9th St., Lafayette, Ind. 47904.

BASF Has Flexy

BEDFORD, Mass. — BASF Systems is offering a series of mini-floppy disks whose design is said to give the writing head of the computer access to 40 tracks instead of 35 and allow the user 1M bits of single-density storage per side.

The Mini Flexydisks come in 10 and 16 hard-sector formats and one soft-sector format, the firm said.

The series was developed for systems using 5.25-in. disk drives and has applications in personal computing and small business environments, a spokesman stated.

The diskettes are priced from $4 to $6 each from BASF Systems, Crosby Drive, Bedford, Mass. 01730.

Avdex Adds Cassette Line

BALDWIN, N.Y. — Avdex Corp. has a line of data cassettes, loaded in one-, three- and five-minute lengths, designed for use on hobby and small business computers.

The cassettes are manufactured with short leaders to prevent leader contact with the recording head and make possible an instant start operation, according to a spokesman.

They utilize machine-guided rollers, stainless steel pins and oversized pressure pads and hubs for a uniform tape transport, he added.

The CDC-1, CDC-3 and CDC-5 cassettes are priced at $4.95, $5.65 and $6.35, respectively, from the firm at 2280 Grand Ave., Baldwin, N.Y. 11510.

Hobby Havens

As a service to hobbyist readers, Computerworld *periodically will list the micro clubs in different parts of the country.*

Clubs wishing to be included in this listing should send their name and address as well as the name and address or telephone number of a contact person to Frank Vaughan at Computerworld, *797 Washington St., Newton, Mass. 02160.*

CALIFORNIA

North .Orange County Computer Club. Contact: Lorin Mohler, P.O. Box 3603, Orange, Calif. 92665. Telephone (714) 998-8080.

IDAHO UPDATE

Pocatello Microcomputer Club. New Contact: Joseph E. Price, Box 8107 (Physics Department), Idaho State University, Pocatello, Idaho. Telephone (208) 236-2350, 232-4462.

ILLINOIS

Cyborg. Contact: Ralph Bargen, 1362 E. 59th St., Chicago, Ill. 60637.

INDIANA

Evansville Computer Club. Contact: Robert W. Herdink, c/o National Sharedata Corp., P.O. Box 3895, Evansville, Ind. 47737. Telephone (812) 426-2728.

MONTANA

Flathead Computer Society. Contact: E.G. Brooner, P.O. Box 236, Lakeside, Mont. 59922. Telephone (406) 844-3410.

OREGON

Oregon Council for Computer Education. Contact: Dick Ricketts, 1200 Highway 99N. Eugene, Ore. 97402. Telephone (503) 689-6500.

PENNSYLVANIA

Centre Country Computer Club. Contact: Carl Vesper, 1357 E. College Ave. State College, Pa. 16801. Telephone (814) 238-0048.

'Privilege Used as Weapon'

IBM Claims Obstructed Prosecution: U.S.

By Catherine Arnst
CW Staff

NEW YORK — IBM has used attorney-client and work product privilege claims as a "weapon to obstruct the prosecution of this case," the government charged recently in the U.S. vs. IBM antitrust trial.

As a consequence, IBM should pay all costs pertaining to the special Masters' Review of some 26,000 documents [CW, March 7], the government requested in a motion before Judge David N. Edelstein, who is hearing the case.

IBM privilege claims, asserted originally for some 100,000 internal corporate documents, have been haggled over by the parties since 1973, when the government first asked that they be produced.

In April 1973, Edelstein appointed three Special Masters to review the documents one by one. The government designated approximately 37,000 documents for the masters' review, and IBM withdrew privilege claims on 10,000 of those without review because they fell into categories Edelstein had ruled did not qualify for privilege claims. After two years, the masters denied privilege claims on all but 2,173 documents.

IBM Claims Denied

IBM appealed their rulings on approximately 14,000 documents but later determined that 50% to 60% of those no longer deserved claims of privilege because of age or the unimportance of the subject matter to the case. Ultimately, 1,100 documents were handed to Edelstein for review last summer, and he denied virtually all privilege claims.

At the time of this review, Edelstein said, "I have looked at the documents and the objections and claims that have been made, and unless I have become completely witless, for the life of me, no matter how I would try or no matter how much I would want to identify with [IBM's] perception of the law...I have not been able to see the merit of some of the objections [to the Special Masters' rulings]...

"I must also say there are documents so clearly outside the possible reach of any [privilege] claim that I am amazed they are in there..."

The government's motion charged that "from beginning to end, IBM counsel have continuously asserted frivolous privilege claims as a means of wasting the time and money of this court and government counsel and for denying to government counsel the best evidence."

Strong Exhibits

The documents at issue which the government offered into evidence this fall [CW, Nov. 7], are considered to be some of the strongest exhibits in its part of the case. Justice Department attorneys complain that if they had had these documents sooner, they could have shortened their court case considerably.

"It should be noted that of all the recent monopolization cases filed against IBM, only in this case did the plaintiff have sufficient resources to pursue the documents in question long enough and in sufficient detail to the point where the frivolous nature and the vast majority of the claims were clearly exposed," the government stated in its motion. Consequently, "less endowed plaintiffs...did not get the documents to which they were entitled," it charged.

IBM's response said the government charges are "palpable nonsense" and its motion a "sham — a reckless attempt to cover up for the antitrust division's mishandling of the litigation."

The firm's defense against the motion is that it availed itself of all avenues of appeal, as is its right, IBM said. "All [the government] really asserts is that IBM should have waived its right because plaintiff would have that be so. If complaints of this nature appear to be imbued with a certain puerility, nothing in the [government's] presentation of the point diminishes the reality of that appearance...

"It is understandable why plaintiff would have preferred that IBM immediately capitulate instead of pursuing its right to have the privileged status of specific documents considered by the masters. But plaintiff's preference in this regard hardly means that IBM's preference not to capitulate is the equivalent of bad faith."

PCMs' Success Convinced IBM To Alter Plans, Memos Reveal

By Molly Upton
CW Staff

SAN FRANCISCO — By November 1970, members of IBM management were aware the firm needed to make some adjustments in its pace of product introduction and profit margins, in response to the activities of plug-compatible manufacturers (PCMs), according to internal IBM documents.

In a memo to W.C. Hume, D.R. McKay and John Opel, author J.E. Bertram said the direct storage access systems area "has come to be an item of major concern for IBM over the last six months, because of rapid growth and technical competence of our competition."

The memo which addressed the Data Processing Group (DPG) plan, was introduced into evidence at the Memorex Corp. vs. IBM trial here.

"In previous years when we had little effective plug-compatible competition, it was possible for us to achieve quite long product lives and attractive profitabilities from our direct access storage device products by stretching out the rate of our new product introduction," Bertram wrote.

"Owing to the change, this is no longer possible as our competitors are hungry, aggressive and possess in combination a total technical competence at least equal to our own," the memo said.

"This means we must reduce the intervals between successive product introductions and reduce our profit margins if we are to remain in this area," Bertram continued.

"We have some problems in reorienting to a competitive situation. Our development capabilities are still geared to a slower pace of technical progress than is now needed." The firm had some difficulties because the disk, tape, architecture and systems areas were geographically and organizationally separate, he indicated.

"The situation is being addressed vigorously by San Jose management and technical people, we are developing new capabilities in disks, heads and servos, and the recent 3330 and 2319 announcements have helped restore our position.

"While our installed inventory represents an exposure to competitive displacement, intelligent reuse plans may be able to assist in containing the situation."

But Predicts Shorter Life Cycle

Investor Sees Smooth Earnings for IBM 30

By Molly Upton
CW Staff

NEW YORK — IBM's 30 series will not experience the sharp peaks and valleys in revenue and earnings traditionally experienced by new product lines, according to a report by Harry Edelson, vice-president of Drexel Burnham Lambert, Inc., an investment firm here.

Previously IBM's revenue and earnings growth has followed the shape of a lambda over the period of the product cycle, which has generally been six years, he observed, but Edelson feels the 30 series' marked trend toward outright sales gives IBM "greater flexibility to stabilize growth."

The lambda formation was built on the rental base. The thesis of the lambda formation is that "the price of IBM's stock is more susceptible to the IBM product cycle than economic conditions, wars or crises."

In the past, the outright sale of DP equipment has accounted for "10% to 30% of IBM's total revenues, and until the last few years the percentage has varied in the shape of a lambda over the course of the product cycle," he said in the report on IBM's product cycle.

Looking at the different circumstances surrounding the debuts of the 30 and the 370 lines, Edelson concluded 1978 will not be a bad year for the 20 series, as the first year in other product cycles has been.

Purchase orders are extraordinarily high for the 30; Edelson estimated "IBM has more orders for the 3031, 3032 and 3033 computers than the total installed base of superseded computers, namely the 370/148, 158 and 168."

And, he noted, there is less fat in the use of computers as users are utilizing their machines for almost two shifts a day, compared with 1.5 shifts in 1971.

"Orders are now strong enough to allow IBM to control operating results by controlling production levels," he remarked. IBM should have a "good year in 1978 and an even better one in 1979, when it is in full production on its new computers."

Growth rates, he said, will stay in the 10% to 20% range, recessions notwithstanding.

Shorter Lifetime

Whereas IBM's product cycle has previously been six years, the 30 series without mid-life kickers may last only three or four years, Edelson observed.

The relatively short life of the series is indicated by the facts that its low purchase price/lease price does not encourage leasing and that there is no model "U" (unit) designation, which implies there may not be any attached processors or multiprocessor versions, he explained.

Also, the series does not incorporate anything radically new in either hardware or software, according to Edelson.

In contrast, "the next major IBM product cycle early in the 1980s is likely to be rental-oriented and include at least some fourth-generation computer hardware and new simplified software that would encourage computer access from remote terminals," Edelson said.

The early '80s will be ripe for such a new line, he indicated, because third-generation computers have been around for 13 years, a long time, and, because the plug-compatible manufacturers are making headway, with Amdahl Corp.'s revenues reaching about $200 million in 1977.

Other reasons include the fact that introduction of new series would not result in "massive discontinuances (returns) of leased IBM equipment" because it has been selling much of its gear in previous years.

Also, the best use of IBM's $5 billion cash reserve would be to "rebuild the lease base by introducing a highly advanced computer series," Edelson observed.

Replacements for the 370/115-2 and 125-2s will likely signal the first mid-life kicker for the 30 series, he indicated.

Edelson listed industry speculations about forthcoming IBM product introductions. These include the possibility of "greatly increased competition" between IBM's Data Processing and General Systems divisions in the form of a machine in the range of the 115-2 125-2 and possibly for the System/3; a terminal-oriented minicomputer system with extensive software from the Data Processing Division in the first quarter of 1978; and a System/36 and 38, which may be the "first IBM commercial product with bubble memory. These might be announced in the summer, he said.

Another possibility is an H series, probably in the last quarter of 1979, which could be fourth-generation but probably will be a mid-life kicker for the 3033 using improved ECL logic and 32K- or 64K-bit memory chips.

The final possibility is the Sierra, which could be announced in late 1981 or 1982, Edelson said. This would be a fourth-generation series using such new technologies as the Josephson Junction and bubble memory for logic, memory and peripherals, he speculated.

Commerce Predicts 23% French Market Growth

By Jeffry Beeler
CW Staff

PARIS — The market for computer products in France will total $6 billion by 1980 for an average annual growth of 23.6%, according to a study released recently by the U.S. Department of Commerce.

In 1975, mainframes accounted for $793 million of France's total $2 billion computer market, and peripherals contributed another $633 million. By 1980, purchases of mainframes and peripherals will increase to an estimated $1.53 billion and $1.06 billion, respectively, the report predicted.

This year, the French mainframe market will exceed a projected $1.05 billion, and peripherals sales will total an estimated $757 million, the study added.

Spurred by this expected growth in hardware demand, French imports of computer products will expand an average of 16.8% annually during the next three years, according to the survey. American vendors will continue to provide 40% of these shipments, about twice the share of West German firms, their chief foreign competitors.

In 1976, the French imported $795 million worth of computers and peripherals, of which U.S. manufacturers contributed $312 million and West German companies $160 million. Other major importers of computer equipment include the UK and Italy, which in 1976 shipped respectively, $154 million and $71 million in hardware.

To counter its heavy reliance on foreign shipments — France contributes less to its own market than any other major computer-producing nation — the French government has committed itself to strengthening its domestic computer industry.

International News

The merger in 1975 of the French company CII with Honeywell Bull to from CII Honeywell Bull represented a step toward greater market control, as does the government's guarantee to provide the new firm $250 million in sales between 1976 and 1980, the study explained.

Production figures for the last four years suggest the French computer industry could use some bolstering. In 1974, French production of computers and peripherals totaled $1.02 billion and $180 million, respectively. By 1977, those totals had risen only to $1.8 billion and $392 million, the report noted.

Growing Value

Despite sluggish growth in domestic output, the value of this country's installed computer base, which totaled $5.4 billion in 1977, will grow to about $5.65 billion this year, to $7.9 billion in 1980 and to $9.6 billion in 1982. In numbers of units, the French installed base will increase from 19,147 last year to 64,937 in 1982, the study forecast.

Of the 24,514 computers that will be installed in France by year end, small computers will account for 21,113; medium-scale units for 2,493; and large-scale mainframes for 908. By 1982, the country's installed base will grow to 59,021 minis, 3,484 midis and 1,534 maxis, the market analysis said.

At the same time, the dollar value of the three equipment categories will also rise steadily. This year, the installed base of minicomputers will be worth $1.51 billion; the installed base of medium-scale computers, $1.59 billion; and $4.29 billion, respectively, the report predicted.

By 1982, the total value of minis, midis and maxis installed in France will have grown to $3.1 billion, $2.23 billion and $4.29 billion, respectively, the report predicted.

U.S. vendors account for about 65% of France's total installed base of general-purpose computers and slightly less than 50% of the country's installed base of small computers, the analysis added.

In other findings, the study noted that, because France is user computerized relative to other Western European countries, the government encourages the development of computer-based techniques. The largest growth in computer use will occur in the manufacturing sector, where hardware expenditures will nearly double between 1975 and 1980, Commerce said.

"Dramatic" increases in equipment sales will also take place in the retailing, communications and medical sectors, the study said.

During the next five years, France's commitment to central processing will weaken, especially among large organizations, and teleprocessing applications will spread as users link their processors to small business computers and minis.

Sales Prospects

The marketing report also foresees rapid expansion in the minicomputer and large systems markets, but declining hardware sales in the medium systems sector.

Sales of peripherals will also make "substantial" strides during the next few years. In fact, purchases in that sector of the market are "likely to outstrip the sales of computer systems themselves in terms of percentage growth," the report concluded.

Study Eyes $6 Billion POS Mart in West Europe

By Jeffry Beeler
CW Staff

NEW YORK — The Western European market for point-of-sale (POS) equipment will approach $6 billion during the next 10 years, and POS terminal systems will account for about a fourth of that total, according to a market study released here recently by Frost & Sullivan, Inc. (F&S).

Of the nearly $1.5 billion that Western European countries will spend for on-line checkout systems through 1987, about $820 million or 56% will be spent by department and variety stores, while another $550 million will be claimed by large self-service stores (super stores), F&S said in its 10-year forecast of trends in the Western European POS market.

Department and variety stores will also dominate continental POS sales from the standoint of unit volume. During the next 10 years, Western European countries will install 205,250 computerized checkout systems, of which 126,600 will go into department and variety stores, the report estimated.

International News

The second largest customer for POS systems will be super stores, which will install 66,700 units between now and 1987, F&S added.

Scanning systems will also experience healthy sales growth especially among large self-service food stores, the study predicted. During the second half of the forecasting period, Western Europe will install 36,900 scanning systems worth an estimated $330 million.

Of that total installed base, super stores and supermarkets will account for 18,720 and 16,020 units, respectively, for a sales value of about $150 million for each of the two market sectors.

As minicomputer-based POS systems and distributed data collection networks grow in popularity in coming years, they will create a rising demand for communications and communications equipment, the report concluded. F&S estimated that 1978-1987 sales of interface and modems to the Western European POS market will total $190 million, of which chain stores and department/variety stores will receive $150 million and $30 million, respectively.

Analyzing projected sales by country, the study predicted France, West Germany and the UK will account for about 63% of Western Europe's total POS market during the next few years. France will have a slight market edge with cumulative sales of more than $1.23 billion, followed by West Germany with $1.20 billion and the UK with $1.18 billion.

Italy will claim the fourth largest market share with total POS equipment purchases of slightly more than $500 million, F&S added.

Examining each country's buying patterns in closer detail, the market research firm noticed considerable differences in distributions of equipment shipments. The UK, for example, will prove the largest purchaser of POS systems for department and variety stores with 29,700 units or 23.5% of Western Europe's installed base.

West Germany will place a close second in that sector with 27,700 POS units or 21.9% of the installed base, and France will account for the third largest share of the department/variety store market with 18,000 shipments.

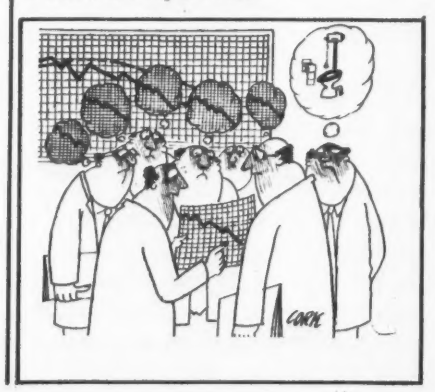
In the super store sector, West Germany will provide the largest market for POS systems with 28,400 units or 43% of the installed base, compared with France's 21,500 units or 33% of the total.

British super stores will buy the third largest number of computerized checkout systems — 3,600.

Among chain stores, the UK will form the largest market for POS equipment with 2,200 shipments of 25.2% of that sector's installed base of 8,650 units, the study estimated. France will rank second with 1,900 units or 21.7% of the installed base, and West Germany will place third with 1,700 shipments or 20.1% of the total.

In other findings, the report predicted that total cash register and POS terminal sales to Western Europe will top $413 million this year and $454.7 million in 1980. By 1987, annual POS equipment purchases throughout Western Europe will exceed $738 million, F&S said.

Of the countries covered in the study, France will provide the fastest growing market for all kinds of POS equipment, with an average annual sales growth of 21.5%. West Germany will rank second in yearly sales increases of 21%, and the UK will follow with an annual market expansion of 20.6%, the report said.



Personnel Needs Triple

Amdahl Staffing Up by 'Turning On' Workers

By Molly Upton
CW Staff

SUNNYVALE, Calif. — How does a firm meet its personnel requirements when the number of its employees triples in a year and a half?

Rather than spending all of its energies looking for people, Amdahl Corp.'s Anthony M. Pozos, vice-president of industrial relations, devotes much attention to making the company a good place to work.

In addition to various compensation plans, the firm attempts to provide an environment that keeps people "turned on" about their job and their prospects, Pozos indicated.

Amdahl has in-house training programs, employee orientation, technical training and in-house continuing education with degree programs from Stanford. It also relies on outside seminars and other exposures for skills training, he said.

In order to keep good people, "you have to help them become better," Pozos believes.

Amdahl wants to be an exceptional company in terms of success and to achieve that goal one has to have exceptional employees who can provide exceptional products and services, he said.

Not Enough Insiders

Currently the firm is staffing 40% of its managerial positions from outside simply because it doesn't have enough people within the organization. However, it would like to produce its own managers and is making a determined effort to increase the number of managers from within the firm.

Although it may be difficult to take a manager or prospective manager away from his job to provide him with additional training, Pozos said that to do otherwise would be unfair to both the company and the individual.

In 1978 the emphasis will be on helping more people inside Amdahl grow. But, he commented, if the firm's rate of growth continues, that will be inadequate.

Pozos' principal problem is finding ways to preserve the feeling of a small company. Amdahl in that regard is at somewhat of a disadvantage because it has a monolithic structure and a single product line; product divisions along product lines as at Hewlett-Packard Co. are therefore not a possibility.

But Amdahl has a series of small buildings, which helps give people an identity with a specific group, and there are gatherings of people within departments, sections and within the enitre company. Recently all employees here gathered to celebrate the shipment of the 100th CPU.

Pozos said he intends to continue exercising creativity in finding ways to encourage the achievement of employees both as individuals and as part of a productive team.

Communications within a company are important. Amdahl holds staff meetings down to the vice-presidential level once a week and an off-site meeting quarterly.

In addition, each officer meets six times a year with groups of 10 to 15 employees, who can ask questions anonymously in advance if they wish or in person.

When any officer is on the road, he is scheduled to meet sales and support personnel in the field to hear their views and keep them posted on what's happening with the company.

Once each quarter all managers get together to report on progress, he said.

Pozos wants Amdahl to be known as a successful company that is a success with its people. His personal goal is to have Amdahl regarded as a company setting the standard for employment. HP currently has that image, he said.

Amdahl has been lucky with its employees, he said, citing a surge of enthusiasm which is pervasive and influential in terms of results. This is evident in the cooperation offered by employees, he said.

The average age of Amdahl employees is probably under 30 now; it was 31 last August, he said.

Amdahl will often leave a position open several months in order to find the right person. The company is selective in terms of both the individual's qualifications and attitude, he said.

The firm has not had a problem obtaining sales people, he added.

Amdahl uses all the standard means of finding prospective employees, but one of the most fruitful is employee referrals, Pozos said. Although the firm offers employees bonuses for people who join the firm, employees recommend people without the bonus, he said.

DDC Claims Method Cuts Disk Head Crashes

By Jeffry Beeler
CW Staff

SAN DIEGO — Digital Development Corp. (DDC) has devised a technique it claims reduces by 1,000-fold the concentrations of contaminants that cause expensive and inconveniencing crashes of fixed-head disk systems.

The technique consists of creating a slightly pressurized helium atmosphere inside disk/head chambers and installing a particle-catching Ferrometric seal manufactured by Ferrofluidics Corp. in Burlington, Mass.

DDC credited the modified design with preventing read/-write head damage and data loss by filtering out particles that migrate to disk surfaces from drive-ball bearings or worn elastometric seals.

In recent tests, the company found the combination of pressurized disk chambers and Ferromatic seals cut concentrations of drive contaminants larger than 0.5 micron to less than 100 parts/million. Before DDC added the seals, particle counts inside the drives averaged 100,000 part/million, the company reported.

Gas Cushion

In the modified drive design, the helium atmosphere protects the disk from crashes by forming a gas cushion or bearing on which the read/write head rides 60 microns from the recording surface. The helium's low molecular weight and the seal's low drag minimize a drive's energy consumption, DDC said.

After purging and sealing the disk chamber, the firm maintains internal atmospheric pressure either by providing a self-sustaining helium supply that automatically replaces any lost gas or by recharging the drives once every six months.

In a typical vertical spindle disk drive, a diametrical gap of only .006 to .007 in. separates the shaft from the Ferrometric seal, which consists of four parts: a ring magnet polarized axially, two magnetically permeable pole pieces that sandwich the magnet and the ferrofluid that forms the "liquid O-ring" dynamic seal.

When the seal is assembled, the magnet and pole pieces remain stationary with a mechanical clearance between the pole and rotating shaft. The ferrofluid sealant fills the ring between the shaft and the stationary pole pieces.

Before it developed the modifed drive design, DDC had little success in using conventional seals to protect disk surfaces from contamination by lubricant-bearing particles, according to Carl Costantino, the firm's enginering supervisor.

"With both sealed or shielded bearings, outgassing of the lubricant deposited tenacious particulate on the disk," he said.

"Lip seals were tried, but seal wear created dust that eventually migrated to the disk. Lip seal wear also shortened life expectancy of the unit," he noted.

Philips Controls Has OEM Motor

CHESHIRE, Conn. — North American Philips Controls Corp. has announced a 12 Vdc 3-watt motor with an ironless rotor and oblique winding design.

The motor, Model 4322 010 76050, can be used in card readers; ribbon, paper, head and carriage drives in printers; chart and pen drives in XY plotters; and reel and capstan drives in audio or digital cassette tape recorders, acording to the vendor.

The motor achieves efficiency in excess of 70%, the firm said. The standard unit, without an optional tachometer, costs $15.20 in lots of 100.

North American Philips Controls is in Cheshire Industrial Park, Cheshire, Conn. 06410.

And Cut Series I, II Prices

HP Planning to Broaden Offerings in 3000 Line

By Molly Upton
CW Staff

SANTA CLARA, Calif. — Hewlett-Packard Co. intends to broaden its line of 3000 offerings, probably at both the high and low ends, and reduce prices on its current Series I and Series II, according to Jerry Peterson, product marketing manager for the firm's General Systems Division.

Despite the new models, Peterson expects the 3000 line will not address new markets but will continue to focus on the horizontal market of IBM System/3 upgrades and on large manufacturing firms implementing distributed data processing (DDP), he said.

HP will be making software enhancements to the 3000s, starting with a multileaved remote job entry (MRJE)

CW Photo by M. Upton
Gerry Peterson

system, which allows a user on a terminal linked to a 3000 to schedule jobs to be passed to an IBM 370 in the network, he explained.

There will also be enhancements to HP's multiprogramming executive operating system (MPE) and data base management and data entry capabilities, he said.

Need for Expandable Machine

In commenting on possible new 3000 models, Peterson said there is a real need in DDP for a more expandable machine in the Series I price range. In addition, there are applications requiring a more powerful 3000, one that can handle 40 to 50 terminals while performing different jobs, he said.

Although the 3000-II can handle up to 63 terminals in a dedicated environment, the average installation with a mixture of jobs has about 25 terminals, he said.

The machine's architecture will permit expansion, whereas current models use only one selector channel and one disk controller, he explained.

During 1978, HP's General Systems Division expects to devote a significant amount of its resources to pursuing the DDP market, Peterson said.

Currently the majority of the 3000's installed base and marketing efforts are in System/3 replacements, he said.

That replacement effort is going well, he added. Generally, the 3000 replaces 3/12s, 3/15s and a few 3/10s. With IBM selling the 34, customers are getting the idea they are going to have to switch anyway. Thus, they look at other vendors as well as IBM because IBM provides no easy upgrade path for users, he said.

In the DDP area, HP competes with Digital Equipment Corp. PDP-11/70s and PDP-11/34s as well as with data entry firms such as Four-Phase Systems, Inc. and Datapoint Corp. Many remote sites are evolving from data entry applications and some of these vendors are entrenched, he said. Data 100 Corp. is also a competitor, and IBM is nearly always on the scene bidding its Series/1 or the 34 or both, he said. Honeywell Information Systems, Inc. is appearing with its Level 6, he added.

Need for Data Entry Capabilities

Vendors in the DDP arena must offer good data entry capabilities, he said, adding that HP hopes to compete head-on in this area with the data entry firms. HP's approach will be to put some intelligence in its terminals and download the software, written in a high-level language, from the 3000, Peterson said.

The 2000 series, a smaller time-sharing machine, is "almost at the end of its product life," Peterson said. HP will support it but there will be no new models, he indicated. However, the firm will build the machine to fill customer orders.

Meanwhile, the Model 2026, dedicated to data entry and data communications, is in full production.

The Series I 3000, which is basically a repackaged version of the original 3000CX with core memory, is doing very well. "We're selling just about all the upgrades we get back," he said, adding the machine's success has surprised some HP people.

The Series I is the first repackaged version of a CPU that HP has ever marketed, he said.

The reliability on the Series I is pushing that of the Series II, which is remarkable considering the former is core as opposed to error-correcting semiconductor memory, he said.

The operating system on the Series I, which has a maximum of 128K, is different from but transparent to that on the Series II, with 512K, he said.

Executive Corner

• Lloyd D. Turner has been elected vice-president and group executive for the Terminal Systems Group by the board of directors of Burroughs Corp.

• Richard Burcham has been named president of Hawkeye Information Systems.

• William McCalmont has been appointed vice-president and general manager of Intel Corp.'s Memory Systems Division.

• Robert J. Pieper has been promoted to vice-president, marketing, at Dataproducts Corp. Robert G. Wallstrom has been promoted to vice-president of the newly created Business and Planning Office.

• Lovell C. Chase Jr. has been appointed vice-president of Comtal Corp.

• Ronald R. Bresnahan has joined Cambridge Memories, Inc. as vice-president of finance. He will also serve as a member of the executive staff at Cambridge.

• Bernard Goldstein has been appointed senior vice-president of Tymshare, Inc.

• C. Thomas Deere has been promoted to executive vice-president for marketing and corporate development at Data Card Corp.

• Richard L. Hencley has been appointed to senior vice-president for corporate programs at Data Card Corp. and William T. Price has been appointed senior vice-president, corporate finance and administration.

• Richard L. Walker has joined Memodyne Corp. of Newton, Mass., as vice-president of engineering.

• Gary E. Liebl has joined Microdata Corp. as president of Microdata International and senior vice-president, Microdata Corp.

• James B. Lambert was elected president and chief operating officer of T-Bar, Inc. A. Henry Morgan was elected chairman of the board.

• Dr. Robert W. DeGrasse has been promoted to senior vice-president and general manager of the Computer Output Microfilm (COM) Systems Division at Quantor Corp. J. Mark Woods has been promoted to vice-president of domestic sales of the COM Systems Division. Vernon R. Pieters II has been promoted to senior vice-president and general manager of the Peripheral Products Division. Thomas C. Rock has been promoted to vice-president of marketing for the Peripherals Division. Torrey Everett III has also been promoted to senior vice-president.

• Donald L. Pulket has been appointed to the position of vice-president of manufacturing at Documation, Inc.

• Samuel Soberanes has been promoted to division vice-president of sales for the CMC division of Pertec Computer Corp.

• Dayton E. Krogstad has been named vice-president and general manager of Randal Leasing, Inc.

• William T. Chambers has been promoted to division vice-president, marketing for the Pertec Division of Pertec Computing Corp.

• Robert E. Kunkle has been appointed vice-president of marketing at Diva, Inc. Also at Diva, David H. Smith has been appointed manager, customer services, Western Region. Stanley Hyduke has been appointed to the position of manager of hardware engineering at Diva.

• Marvin S. Rosoff has been promoted to vice-president, industrial relations, and Alexander W. Giles Jr. to senior vice-president, finance at Modular Computer Systems, Inc. (Modcomp). Richard Adams has been named Modcomp's Head of Operations.

• Vincent R. Ceriello has been elected vice-president and director of Human Resources Management Systems at Hay-Huggins Data Services, Inc.

• Reto Braun has been appointed vice-president and general manager of Memorex Corp.'s Europe, Middle East and Africa Group.

• Samuel Soberanes has been promoted to vice-president of sales for the CMC Division of Pertec Computer Corp.

• C. Trent Riley has been appointed vice-president of human resources for Sycor, Inc.

• Dr. J. Leland Seely has been named a vice-president and manager of corporate R&D at American Microsystems, Inc.

• Andrew P. Psihas has been appointed vice-president and center manager for National Sharedata Corp.

• Ronald J. Hilbink has been named vice-president of personnel and facilities administration at Dataproducts Corp.

• Dr. Yoshiyasu Narahara has been appointed director of technology development at Shugart Associates.

• Steven H. Puthuff has been named vice-president of engineering for Memorex Corp.

• Frank Biamonte has been appointed general manager of STC Systems, Inc.

• NCR Corp has named Herbert M. Schene vice-president of Far East/-Australasia and Paul W. Lappetito vice-president of Canada/Latin America. A.J.R. Oosthuizen will replace Lappetito as president of NCR Canada.

• Gary F. Hall Sr. has been elected vice-president of Recognition Equipment, Inc.

• Carl L. Holder has joined Wabash Tape Corp. as vice-president of product management.

• David A. Kidd has been appointed marketing manager at National Computing Industries.

• John F. Williams has been named president of IBM's real estate and construction division.

• John M. Thornton has been named chief executive officer of Wavetek. Joel A. Naive will resign as chairman of the board and become chairman emeritus while continuing to aid management as a consultant.

• Warren Bess has joined Improved Insurance Systems, Inc. as vice-president of marketing.

TSUNAMI

By Charles P. Lecht

CHAPTER II

To any observer even remotely familiar with the computer industry — or the Japanese — the rapid growth and technological advances achieved in the Japanese marketplace, particularly within the last few years, have not come as a surprise. The Opec embargo and the energy crisis of the '70s demonstrated to virtually all the world's industrialized nations how vulnerable they were to politically motivated or other artificial disruptions of supply. They shook Japan to a degree perhaps not fully appreciated by governments having more or less adequate, compensatory access to internal or alternate outside sources.

Japan has always been compelled by a dearth of natural resources to structure its economy (and, by extension, to behave in the world market) in such a way as to minimize its dependency on others, thus attaining the highest possible degree of self-sufficiency consistent with its inevitable political obligations, national survival and self-esteem. In this, history has served Japan well, for it has dramatically instructed this proud people in what the world regards as acceptable (or, rather, unacceptable) means of reducing exposure to raw material and energy shortages.

The tragic lessons of 20th Century political and military warfare, which the Japanese learned at exceptionally great expense, have made Japan's successor governments acutely sensitive to the threat technological weakness poses to their national integrity. It is perhaps natural, therefore, that they should seek to buffer their economic position against the adverse effects of land-related poverty by exploiting those qualities which they possess in abundance: aggressiveness and competitiveness toward "outsiders"; the ability to dedicate themselves to some focal, communal activity (especially when this is defined for them by figures of authority within the national community); and a singular aptitude for recognizing technology-based processes and products with high economic potential, importing the seminal technology cheaply ("discount mimesis"), improving its price/-performance characteristics (value-added inventiveness applied to an outside model) and, finally, reexporting it (shrewd intelligence).

In short, the Japanese have what living on a rock cannot take away from them: brains and will power.

While fervently maintaining their age-old traditions and spiritual values

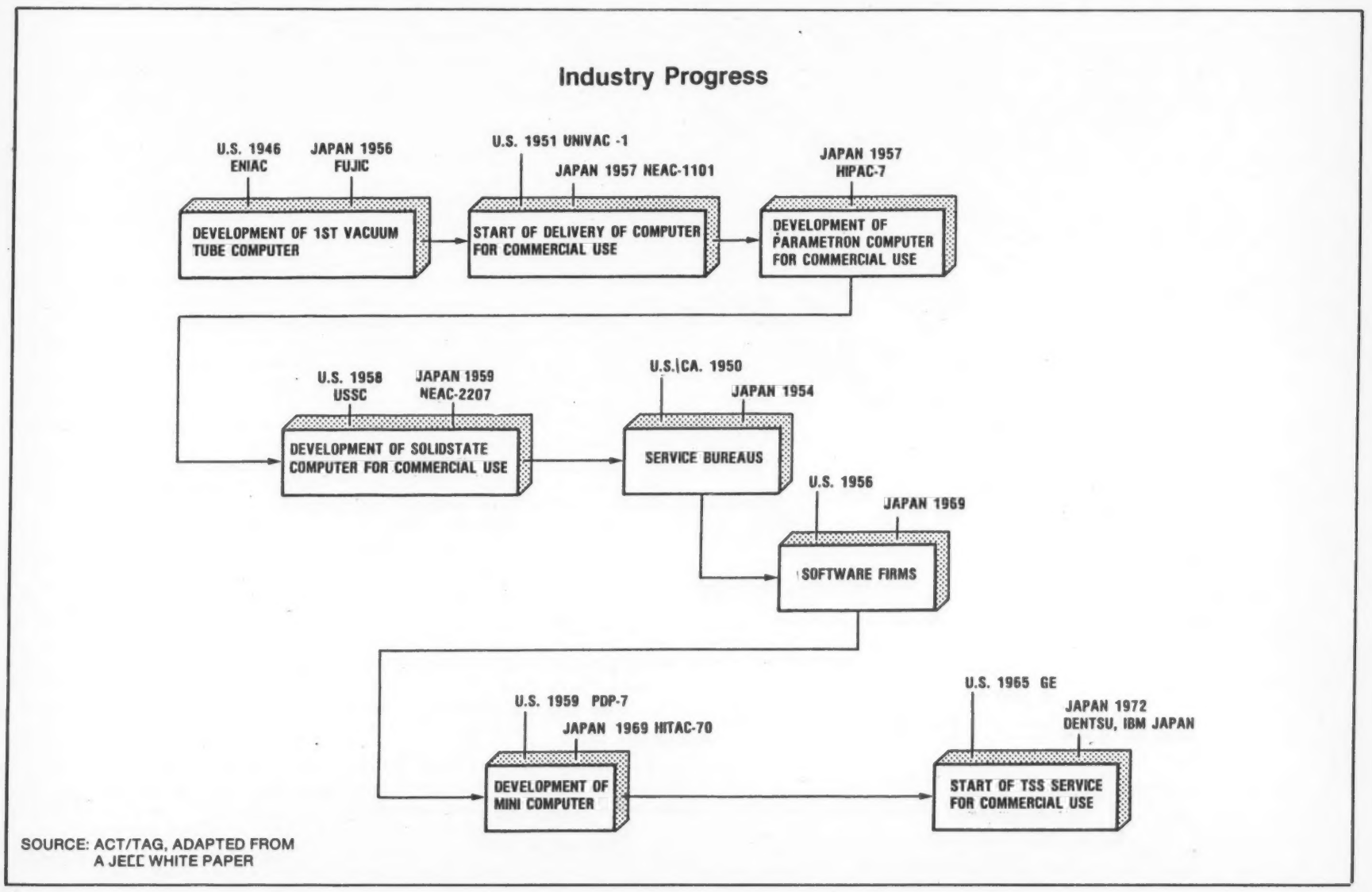


Figure II-1

IN DEPTH

(at least insofar as these apply to their private domestic life), the Japanese have been just as ardent in their commitment to national independence through adoption and adaptation of modern methodologies first developed elsewhere. Following the international calamity of the 1940s, the Japanese people taught the world a lesson in material management in their approach to rehabilitation of leveled industries.

I believe the Japanese will teach the world yet another lesson in the 1980s in (although hopefully in a less drastic context) — this time as much motivated by desire as need. They are proud of their ability to economize. Also, by any measure, they have shown themselves to have little patience with antiquated methods, technological or otherwise, where reconfirmation of their status as a world economic power is directly involved.

In view of Japan's startling rise to second (only to the U.S.) in the world in the manufacture and usage of computer systems, not to speak of electronics in general, I believe the U.S. government may well want to reevaluate its support of like industries here at home to see what can be done to ensure it is not inadvertently contributing to the erosion of its own leadership position. Recent events suggest that it is in fact making just such an inadvertent contribution, but that is the subject of a later *Tsunami* chapter.

Since (in my view) the potential of computer and communications systems technology is as great as that of nuclear technology in matters pertaining to the conduct of both peace and war, I further believe the Japanese government (like the governments of almost every other highly developed nation) is fully aware of the significance of technological leadership as it prepares for its future. Like other countries prevented either by agreement or lack of resources from applying nuclear technology to the creation of weapons systems, Japan in some ways now finds itself in an enviable position arising from its having dedicated its nuclear technology-related investments to peaceful uses. This should dramatically help its economy to overcome present shortages by the turn of the century.

The Invisible Arsenal

But this fact does not necessarily imply that so highly intelligent a people will be totally without recourse in the event of global conflict, regardless of the form such conflict might assume, if its technology base can remain strong in other (nonnuclear) areas. To conceive that, in the event of war, countries without *nuclear* attack or retailiation capabilities will adhere to agreements purporting to limit *other* means of either attack or retaliation (e.g., biochemical warfare) is a grim and dangerous absurdity.

Even our government, having apparently recognized the power of nonexplosive alternatives, has concluded lately that it may be in our best interests to reevaluate our own attack and deterrent options.

The U.S. position on various alternatives to nuclear weaponry has seemed sadly ostrich-like. Ostensibly convinced that the boom, flash, crash and radiation of the bomb are enough to make our real and potential enemies keep their distance, we and they both know that more effective means to neutralize entire countries exist.

For, even after having disavowed the destructive potential of chemical, bacteriological and radiological phenomena, we are not unaware that a highly developed computer and communications system can yet be used to penetrate a foreign government's financial machinery, its military security, etc. and then aid in creating the conditions for neutralization before it can act.

In the realm of the invisible, computer systems-related activities can be assured a prominent role in our growing arsenal.

The incredible breakthroughs in computer technology which we are now witnessing will take us toward a world where, if conflict arises, war may be conducted without visible damage either to people or to their environments — especially in the case of noncombatants. Through our advancement of computer and communications technology, we can create the means to augment our physical and intellectual powers artifically so as to be able to accomplish objectives — including the avoidance of conflict — that might otherwise involve the use of force.

The U.S. now leads the world in computer technological know-how, as it has from the beginning of the computer era. It also leads in communications know-how, although in this case its supremacy is of a lesser degree. Both leadership positions are, in my opinion, being eroded as other nations inprove their own industries.

The Japanese, in particular, having leapfrogged over Germany, France and England in the past five years, are challenging the preeminence of the U.S. computer industry in the world marketplace in ever more powerful and effective ways. While Japan has become the world's second largest user and supplier of computer systems, it is the only developed country now meeting more than 50% of its own DP needs through home-based industries.

While this chapter describes the startling performance of Japanese industry in creating and nurturing a domestic technological fountainhead, it is in no way intended to suggest that this necessarily poses a threat to anyone, or indeed that it will not ultimately be of benefit to us and to all mankind.

Rather, it is intended to provide con-

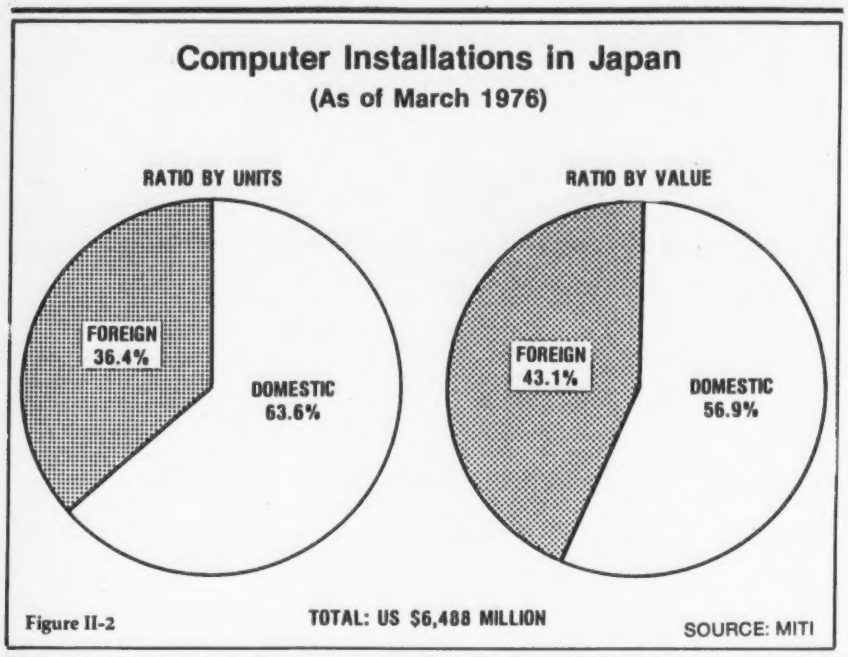
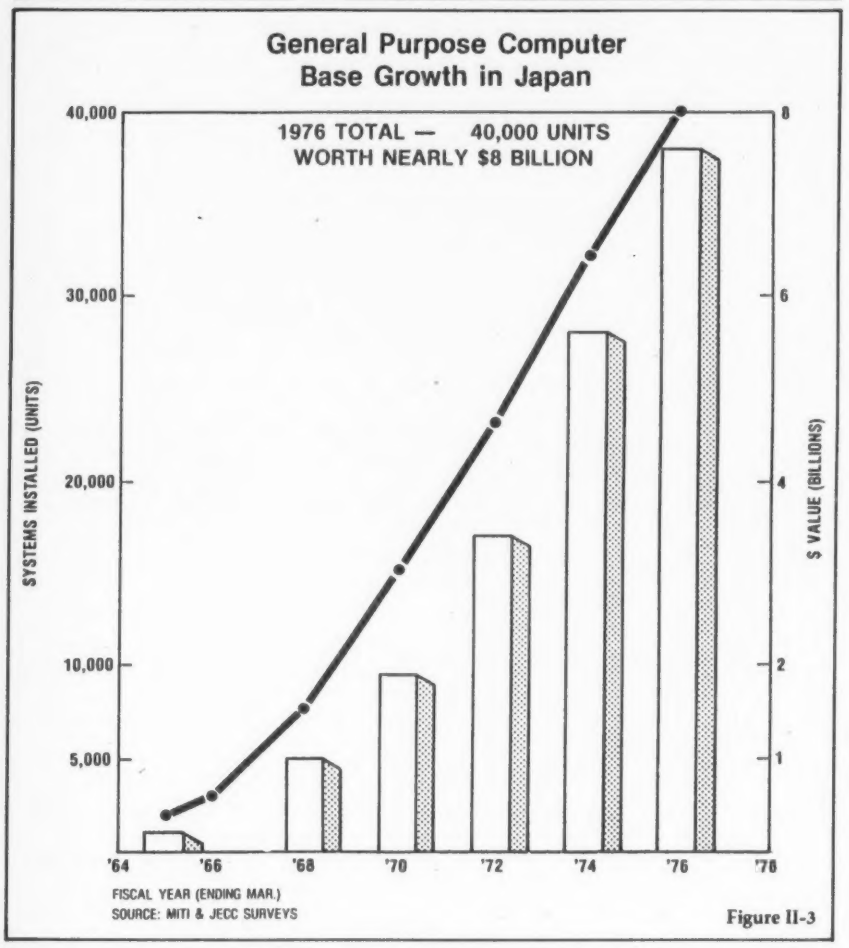


Figure II-2



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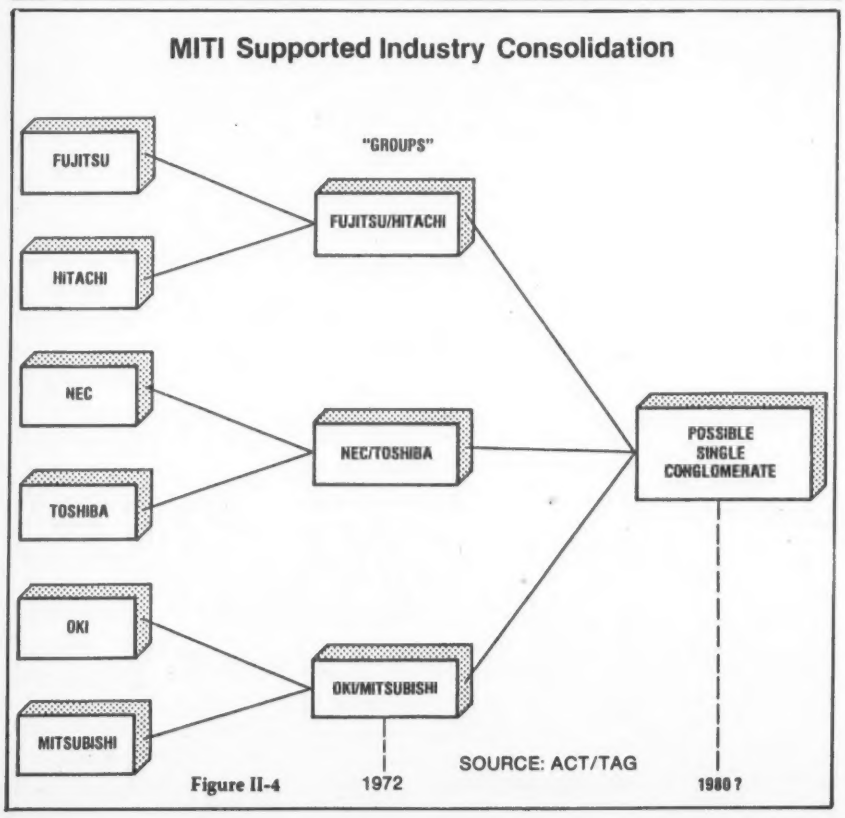


Figure II-4

cerned Americans who see some virtue in the fact of our current technological leadership with a description of the Japanese computer industry challenging it.

Positioned to Strike

In an article in the January 1978 issue of *Datamation* entitled "Is There a Japan, Inc.?" E.K. Yasaki suggests the low-volume export market currently controlled by Japanese computer manufacturers signifies an overreaction in our country to the possibility of too much competition from Japan.

Noting that "no more than 5% of [Japan's] computer production" is exported and that "most of that is from IBM-Japan," Yasaki concludes that, even while Japan's desire and intention to increase exports in this area are not in doubt, "American users will be exposed to Japanese small systems before many are exposed to the likes of a Japanese medium- or large-scale machine."

However, as *Datamation*'s top Far East editor must know, this phenomenon can at best be a source of uncertain comfort to us with respect to Japan's posture as a contender for world leadership in the manufacture and/or usage of computer systems. With more components, so-called subassemblies, LSI chips and peripherals being made in Japan today than in any other country but the U.S., and with processor technology changing to reflect the benefits of networked clusters of minicomputers and microcomputers, the Japanese are perfectly positioned to strike for world leadership.

It is clear Japan has need to create the most efficient management and manufacturing machine possible in view of its critical resource shortages. Ninety-eight percent of its own iron ore supply, 99% of its petroleum, 100% of its tin, nickel and bauxite, 82% of its coal, 86% of its copper and 100% of its nuclear fuel (uranium) are imported, and it is now facing a growing food import requirement.

It is indeed one of life's ironies that the Japanese, who constitute one of the most productive peoples in the world and who strongly desire to remain so, must depend so heavily upon imports. As we have said, they certainly have no shortage of brain power, people power or of will. And in our changing modern world, where need fulfillment is more likely to give rise to anarchy than to diligence, the Japanese are a striking example of the vitality and persistence of "our" Protestant work ethic.

With a land area roughly comparable

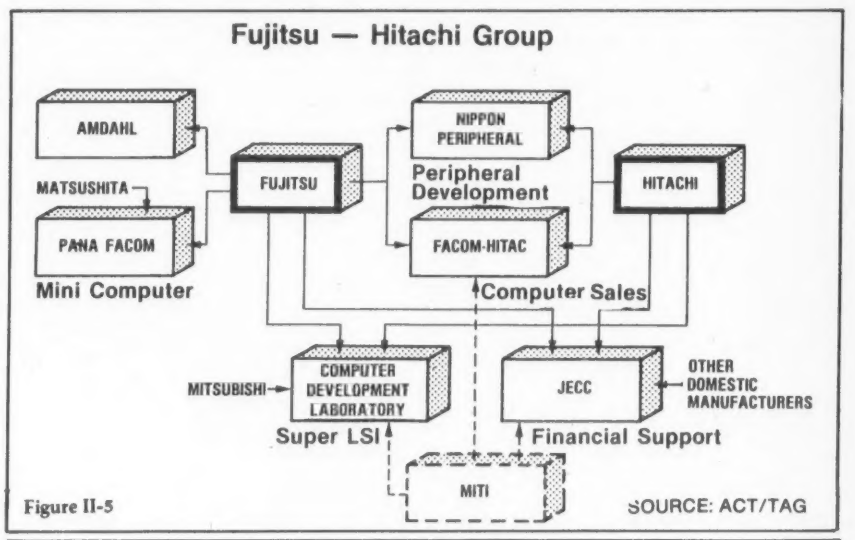


Figure II-5

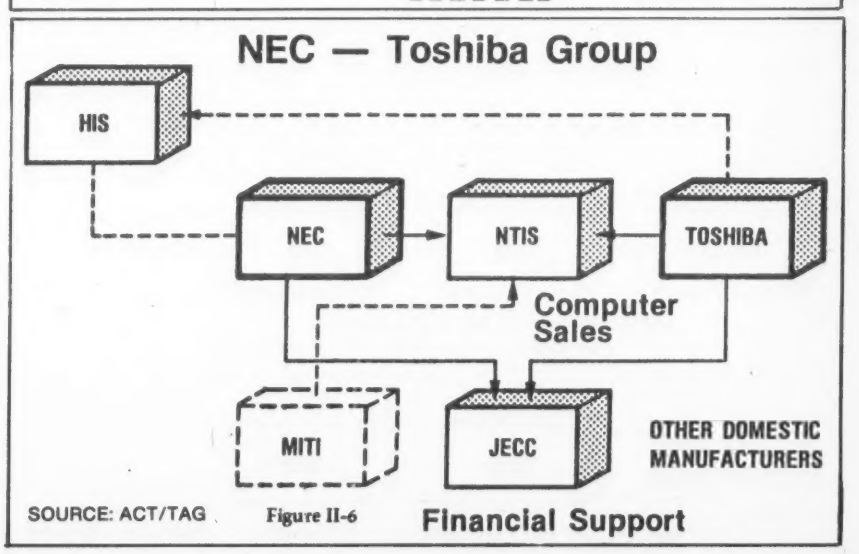


Figure II-6

IN DEPTH

to that of California, Japan is about half as populous as the U.S. and has a current gross national product (GNP) about half as large as ours. Its GNP growth rate (prior to the oil embargo/-crisis of 1973) was nearly 10% per year. (Both the U.S. and Japan now have GNP annual growth rates in the neighborhood of 5%, demonstrating the impact of developments in our oil trade upon Japan's overall economic position more forcefully, perhaps, than any other statistic.)

Moreover, in fiscal 1977, Japan had an estimated trade surplus of approximately $16.5 billion, (according to the Jan. 23, 1978 issue of *Electronic News*), while the U.S. incurred a trade deficit of about $28 billion. Japan's recent recession caused its unemployment to climb to an all-time "high" of about 2% of the labor force, in comparison with a rate of nearly 7% in the U.S. in 1977.

Cultural Impetus

The unique cultural envelope of Japanese life, while not altogether precluding internal strife — indeed, the levels of disorder seem to be intensifying overall — nevertheless ensures that Japanese industry can count upon a degree of individual diligence and loyalty, the equal of which exists in no other developed country.

The second largest users of computers in the world, the Japanese had nearly 23,000 domestically produced general-purpose systems worth $4.6 billion installed as of December 1976. The total installed base comprised nearly 40,000 systems, worth over $8 billion when foreign manufacturers' products are included.

Japan is also well on its way to becoming the world's leading electronics producer by the mid-'80s. Total electronic output was valued at approximately $21 billion in 1977, or about five times the 1967 rate. Also, by the mid-1980s, the total usage of computers in Japan will rise to represent more than 4% of the GNP, the Ministry of International Trade and Industry (Miti) has projected.

Japan's growing success in electronics, DP and other high-technology products has concerned the Western (primarily U.S.) manufacturers to the extent that IBM, it is reported, considers Japan "its most competitive marketplace" and " Number One future challenger in world DP markets." Indeed, with a share of approximately 30% of the Japanese marketplace as of March 1977 (see Figure II-8), but increasingly beset by problems in certain of its international operations, IBM cannot help but see itself being elbowed aside in other nations by Japanese companies producing systems of high quality at costs lower than its own.

While real competition these days may come from other than the Japanese, none, perhaps, but the Germans and Italians (future Tsunami chapters will cover these worthy competitors) seem capable of matching Japanese quality, prices and/or delivery schedules.

That a substantial share of Japanese DP and electronic component technology originated in the U.S. is understandable in view of the heavy U.S. investment in Japan in the past 25 years or so. The technology was purchased or obtained through licensing agreements; it was also "brought home" by the scores of Japanese students and visitors the U.S. has trained and entertained over the past years.

In many cases, innovative Japanese engineers acquired U.S. parts, equipment, even designs, and improved on these to produce systems competitive with our own.

A recent example is Fujitsu's acquisition of Amdahl Corp.'s 470V designs and technology. The Fujitsu M-190 and its now announced M-200 are actually enhanced Amdahl designs, e.g., I/O channel dynamic address translation (DAT) capability and higher density memory chips were added. Following development of multiprocessor capability, among other value-added functions, Fujitsu with its M-200 seems to have provided us with an excellent demonstration of the capability of the Japanese computer industry to leapfrog our own; the M-200 is reputed to be considered more powerful than IBM's 3033 and Amdahl's 470V/7.

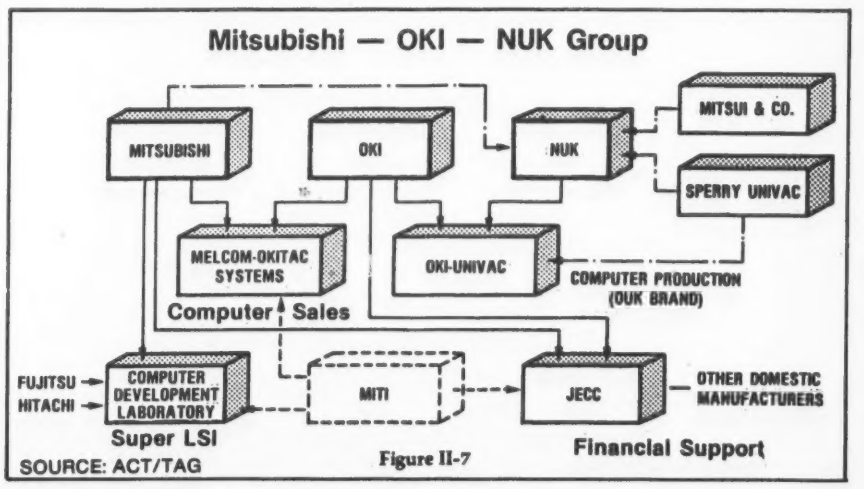


Figure II-7

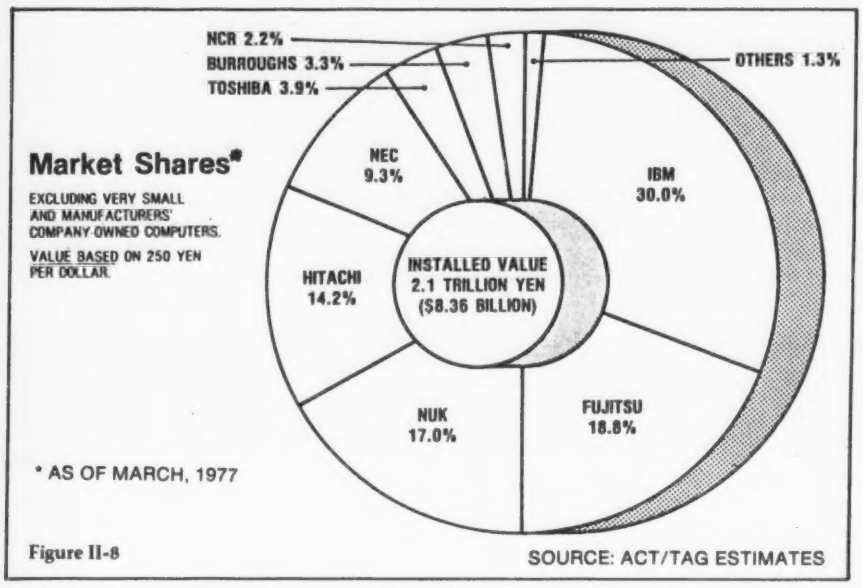


Figure II-8

SOURCE: ACT/TAG ESTIMATES

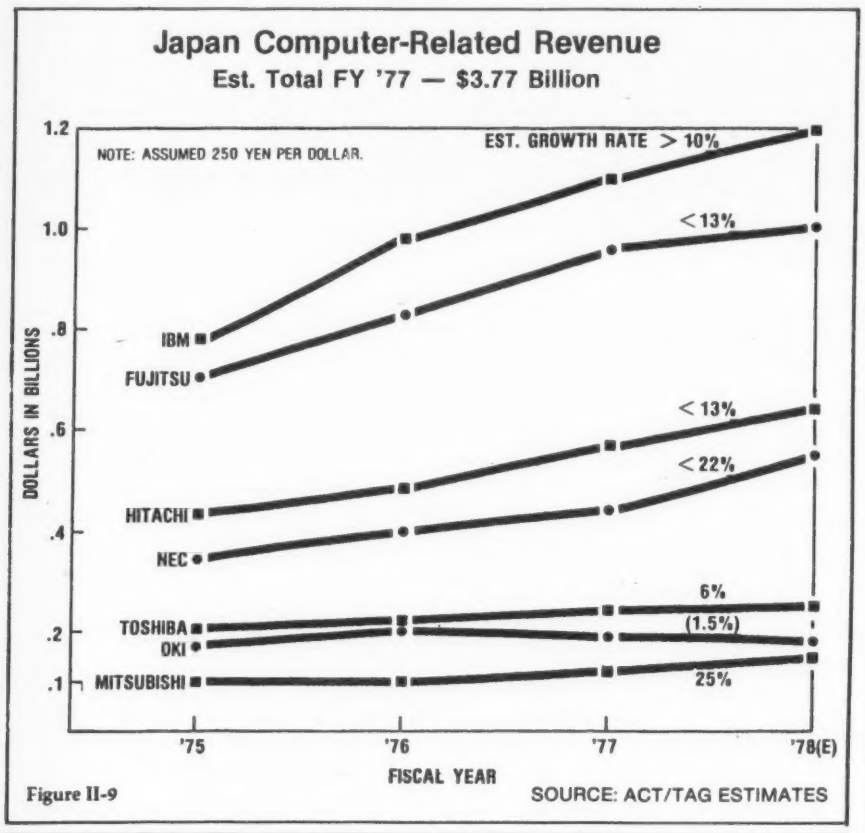
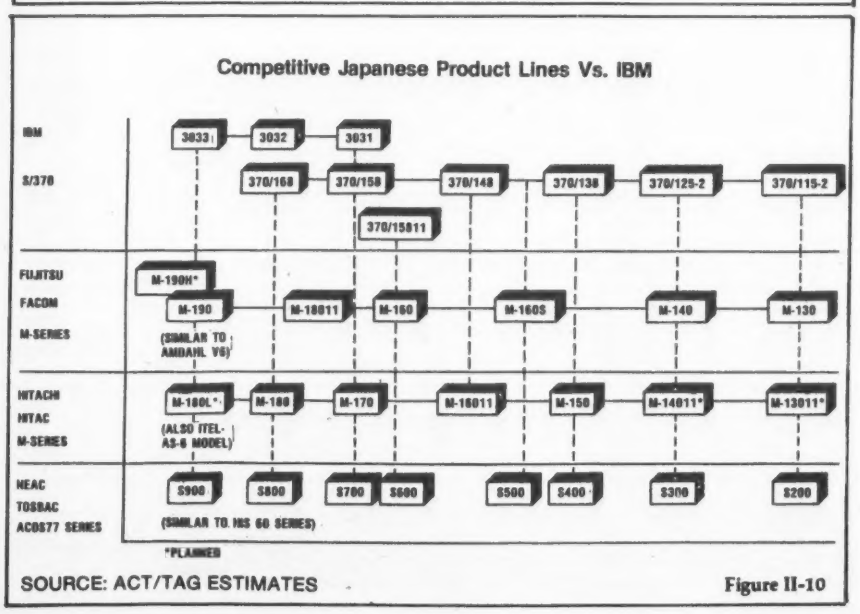


Figure II-9

SOURCE: ACT/TAG ESTIMATES



SOURCE: ACT/TAG ESTIMATES

Figure II-10

I do not believe any foreign computer systems manufacturer anywhere is as capable as the Japanese in making use of *our* technological achievements; Japanese chauvinism is an anachronistic concept when it comes to technological methods.

Fujitsu says its willingness to back the amazing Mr. Amdahl when Wall Street financial institutions would not (in the early 1970s) has actually benefited the U.S. Without its financial support, it feels that Amdahl's technology wuld not be available today within the U.S. (and other marketplaces) and that this development in turn forced IBM to react by lowering its prices (e.g., 370/158 and 168) through the 30XX announcements — thus creating more competition for the benefit of *all* users.

Although it thought the Amdahl venture risky, Fujitsu also had the foresight to conclude its own exposure to financial loss would be offset by a potential quantum jump in its own technological know-how.

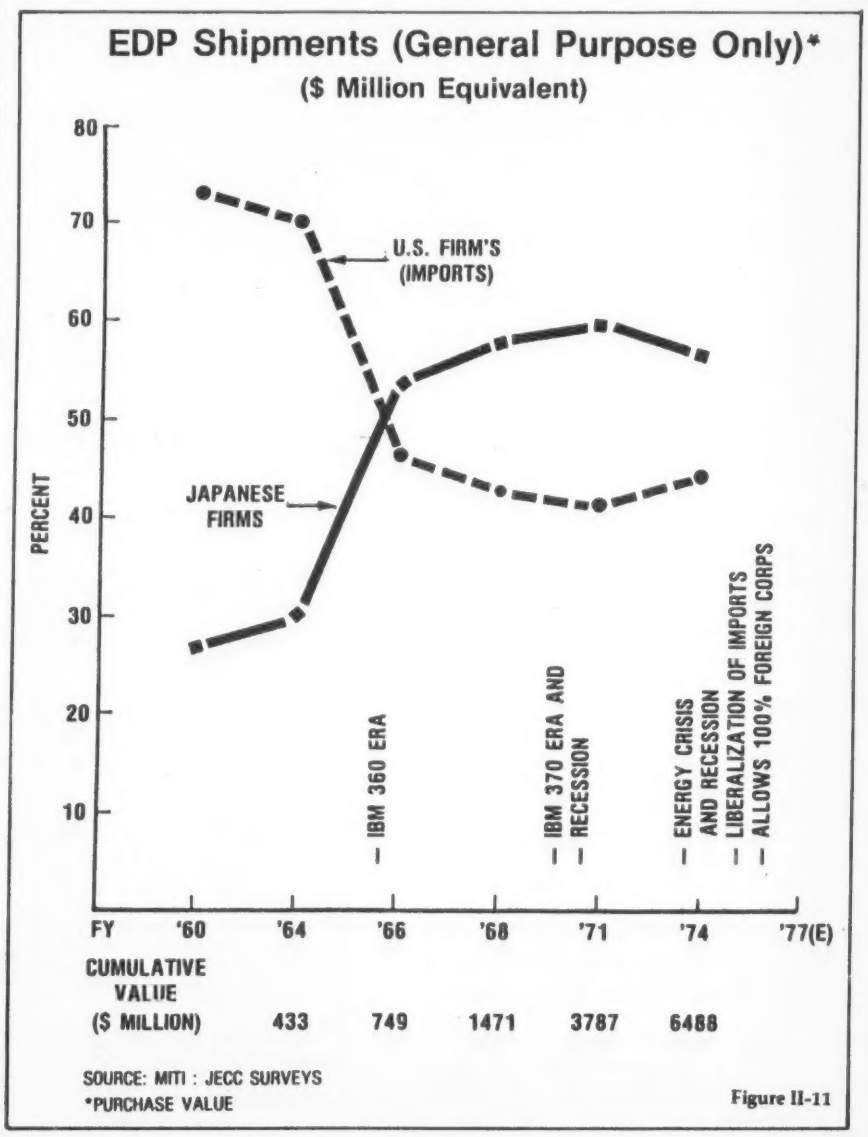
Thus, we now have ample cause to wonder whether the U.S. financial community, by its rejection of Amdahl, wasn't in the final analysis speaking more to the U.S. government than to Amdahl. For factored into that community's decision must have been a healthy fear that our own government's policies would make it difficult for a new, large computer manufacturer to survive. (In view of our government's apparent campaign of debilitating legal actions against our DP industry, it would be difficult not to notice that we lack a national information systems industry policy; this is a lack from which the Japanese do not suffer.)

U.S. Firms in Trouble

Nippon Electric Co. (NEC) and Toshiba also obtained much of their technology and computer designs through cross-license agreements with Honeywell Information Systems, Inc. Some of the more competitive models of the Acos series are actually HIS Series 60 designs.

In fact, the NEC-Toshiba group has produced a less costly, more powerful version of some HIS Series 60 systems and is negotiating their export to HIS and HIS affiliates.

Other such examples include the Univac 90 series processors (e.g., 90/30 through 90/80), which are produced by the Mitsubishi-OKI-NUK



SOURCE: MITI : JECC SURVEYS
*PURCHASE VALUE

Figure II-11

group.

Burroughs Corp. and NCR Corp., like Univac, have recently been in difficulty as viable competitors in the Japanese marketplace because of increasing domestic competition (including price cutting). In a sense, these U.S. companies and others are facing *three* IBMs in Japan, given that the two powerful combines — Fujitsu-Hitachi and NEC-Toshiba — and IBM-Japan are each as potent in Japan as IBM by itself is here.

One would guess that Univac's position in particular, once so strong in Japan, has been dealt a blow by Univac's own recent decision to cancel its "Roanoke" project (also known as UPL, or Unified Product Line). NCR and Burroughs, never strong in the general-purpose systems marketplace in Japan, now face increasingly uncertain futures.

The U.S. minicomputer manufacturers do not seem to face a bright future either; domestic Japanese mini and small systems manufacturers are too strong for them to compete.

Remarkable Growth

The use of computers in Japan started roughly in 1955. As we noted earlier, over the past two decades the number of computer systems in operation has increased to nearly 40,000 units with a total value of about $8 billion as of December 1976. This represents nearly a 15% increase over 1975, the lowest growth rate year ever, attributable to the impact of the recession upon Japan in the early 1970s.

Computers are now affecting virtually every facet of human life in Japan, such as transportation, distribution, education, medicine, energy and environmental protection. Thus, computers have already become an indispensible element in Japan's social and economic fabric.

Figure II-1 shows the evolution of the Japanese computer industry superimposed on our own from the 1950s through the early 1970s. Figure II-2 provides a representation of the Japanese installed based from the early '60s to the present day; Figure II-3 shows the growth of this base from the mid-1960s to the present.

With extensive support from its government, the Japanese domestic computer industry has registered startling growth. Indeed, domestically produced computers are now in very wide use in Japan, accounting for about 60% of the total value of computer systems installed.

The Japanese government has designated the computer industry as one of the nation's "core" export industries for the future. Among the major reasons given for this designation is the Japanese view that the information needs of today's increasingly complex society extend to almost every area of human activity and that this points to an almost limitless expansion of the DP market worldwide.

Japanese industry leaders who defend their government's concern for its computer industry cite a report prepared by the Commission of the European Communities entitled "Community Policy on Data Processing." The report maintains that DP increasingly penetrates virtually every walk of life, transforming management and administration, education and science.

The very structure of society may be determined in the future by the way it uses information systems. As labor-intensive industries move toward developing countries, Europe needs to develop, rapidly, industries requiring concentrated skills of a high level; of these, data processing presents a classic example.

Sensitive as they are to public opinion, the Japanese must be admired for their patience with other nations in having to justify their achievements. Their computer industry did not yet even exist when Europe's was already well developed. But as we observed at the start of this chapter, the reasons behind their need to promote growth in *this particular* resource aggressively

were all too clear.

Also behind the Japanese government's attention to its computer industry is the fact that computer technology has a very high degree of transferability to other electronics products. A survey recently conducted by the Japan Electronic Industry Development Association (Jeida) indicated 84% of all the technologies involved in developing and manufacturing 49 selected electronics products were derived from computer technology.

Government-Industry Venture

Recognizing the cash requirements for effective competiton in the computer industry would exceed what any single Japanese company could afford, the Japanese government and major domestic manufacturers joined together in the latter 1950s to help create the Japan Electronic Computer Co., or Jecc. In August 1961, Jecc was designated the sole rental agency for domestically built computer systems. Working under a scenario which involved its front-end financing of systems sales and rentals, it grew as it helped Japanese manufacturers realize quick returns on their marketing efforts.

As of 1976, Jecc's capitalization was Yen 59,700 million ($239 million). Since it requires enormous funds to purchase "sold" computer systems, Jecc has benefited from the generous cooperation of many financial institutions, including the Japan Development Bank, commercial banks, trust banks, life insurance firms, property insurance companies and local, mutual and foreign banks.

With extensive assistance from the Japanese government, Jecc has played a key role in enabling its shareholder manufacturers to concentrate upon research, development and production. This in turn has contributed significantly to the development of the Japanese computer industry.

Today, Jecc's main business is still leasing computer systems purchased from its shareholder manufacturers to users. With its business expanding, Jecc also intends to provide a variety of user-oriented services. It is, in fact, already doing so by offering survey, research and consultant services, among others. (see Figure II-12 for a summary of Jecc financial data.)

'The Jecc Yoke'

But Jecc's existence is not untouched by controversy, even in Japan. When speaking privately to Japanese computer industry experts, one cannot help but feel they would like to be free of what one executive termed "the Jecc yoke."

For while its member companies are indeed benefited by Jecc yen on the front end of a "sale," in return for this they give up to Jecc the benefits of long-term leasing, perhaps the foremost reason for IBM's past successes. (It should be understood that the "sale" process, in this context, involves negotiating a fixed-term lease with a client, turning it over to Jecc and obtaining in return a fixed amount from Jecc. Jecc thus becomes the leaseholder.

Further to the executive's point, if the "sold" system is returned to the manufacturer in less than its term, it must be repurchased from Jecc at a rate highly advantageous to Jecc. This essentially fixes the potential profit of Jecc membership, while leaving open that of Jecc (which thus, presumably, cannot lose).

Even though Jecc is owned by its members, *they* cannot survive unless systems that are "sold" stay on lease for the contracted terms or longer. No doubt this properly motivates the home-grown Japanese computer industry as a whole to be highly competitive with foreign industries, even as individual companies remain internally (and fiercely) competitive with one another.

Thus, while in a stable economy Jecc can be very helpful to the Japanese computer industry, it is unfortunately

Japan Electronic Computer Company Finances

(In ¥ 100 million)

Year	1961	'62	'63	'64	'65	'66	'67	'68	'69	'70	'71	'72	'73	'74	'75	'76
Computer Purchases	11	32	59	117	208	269	368	666	825	922	874	892	1,080	1,244	1,264	
Loans from Japan Development Bank	2	8	15	25	55	70	70	90	155	215	390	150	215	325	530	470
Capital	11	21	32	47	71	106	142	189	284	425	534	597	597	597	597	597

SOURCE: JECC

Figure II-12

a drain on its vitality in times of rapid change.

Incentives for Cooperation

In 1971, dissatisfied with the state of Japan's computer industry, the powerful Miti organization provided the six major Japanese mainframe manufacturers with an offer they couldn't refuse: Miti "suggested" that while continuing to compete they also cooperate to ensure their survivability, and the ministry provided financial incentives for them to do so. The home-cultivated computer industry was bedraggled by continued change and acceleration through the period of rapid economic growth that characterized the latter '60s in Japan.

According to R.T. Fertig, vice-president of Advanced Computer Techniques Corp.'s Technology-Analysis Group, "the Japanese marketplace was literally churning with product announcements." No Japanese computer manufacturer could claim profitability and the Japanese government felt compelled to authorize Miti to find ways to help its national computer industry. It suggested that, in a land empty of critical, natural resources and inhabited by people intensely desirous of staying there, a failure to acknowledge the importance of other, "indigenous" commodities such as technology would be shortsighted, indeed.

Late in 1972, the six domestic Japanese mainframe manufacturers were thus realigned into three groups, each consisting of two firms. Figures II-5, II-6 and II-7 show the three groups and their complex interrelationships. Figure II-4 provides yet another perspective on the possible results of Miti's activity: a national conglomerate.

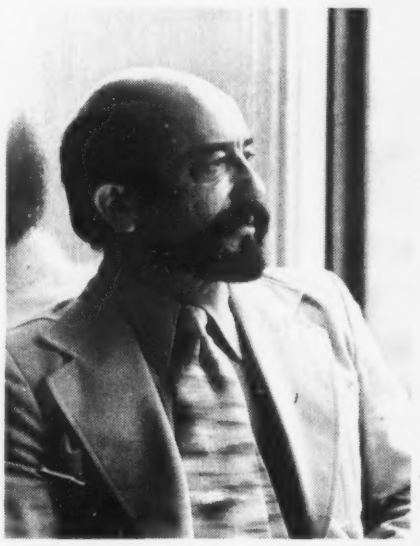
Reviewing Figure II-9, we can conclude (if we leave out IBM) that such an entity would have constituted the second largest computer company in the world (in terms of combined revenues from DP).

Recent U.S. government concern for its negative balance of trade with Japan might legitimately be extended to the potential threat U.S. companies engaged in the world computer technology trade face from Japanese competition. While noticing the 148% increase of Japanese DP products exported to the U.S. in fiscal 1976, it has done little to help *our* manufacturers to compete. Figure II-11 dramatically portrays how effective the Japanese government has been in helping its own industry to handle the same problem.

Figure II-10 says it all. We can only admire the meticulous manner in which Japan's home-based computer industry has matched each and every IBM competitive product challenge.

Anyone reviewing this data cannot help but conclude that recent Japanese industry protects over U.S. overreaction to Japan's competitive viability in DP are indeed unjustified.

It seems clear to me that the Japanese, like any business interest group enjoying great success in its chosen market, currently aspire to maintain the lowest possible profile in the DP market. Under the circumstances, they are as likely to achieve this objective as might a dragon seeking to conceal itself under a tatami mat.



Lecht is the author of five previous books on computer-related matters: The Programmer's Fortran II and IV, The Programmer's Algol, The Programmer's PL/I *and* The Management of Computer Programming Projects *and most recently,* The Waves of Change.

He is president of Advanced Computer Techniques Corp., which he founded in 1962, and has lectured widely for such groups as the Association for Computing Machinery. American Management Association, American Society for Information Science and Data Processing Management Association.

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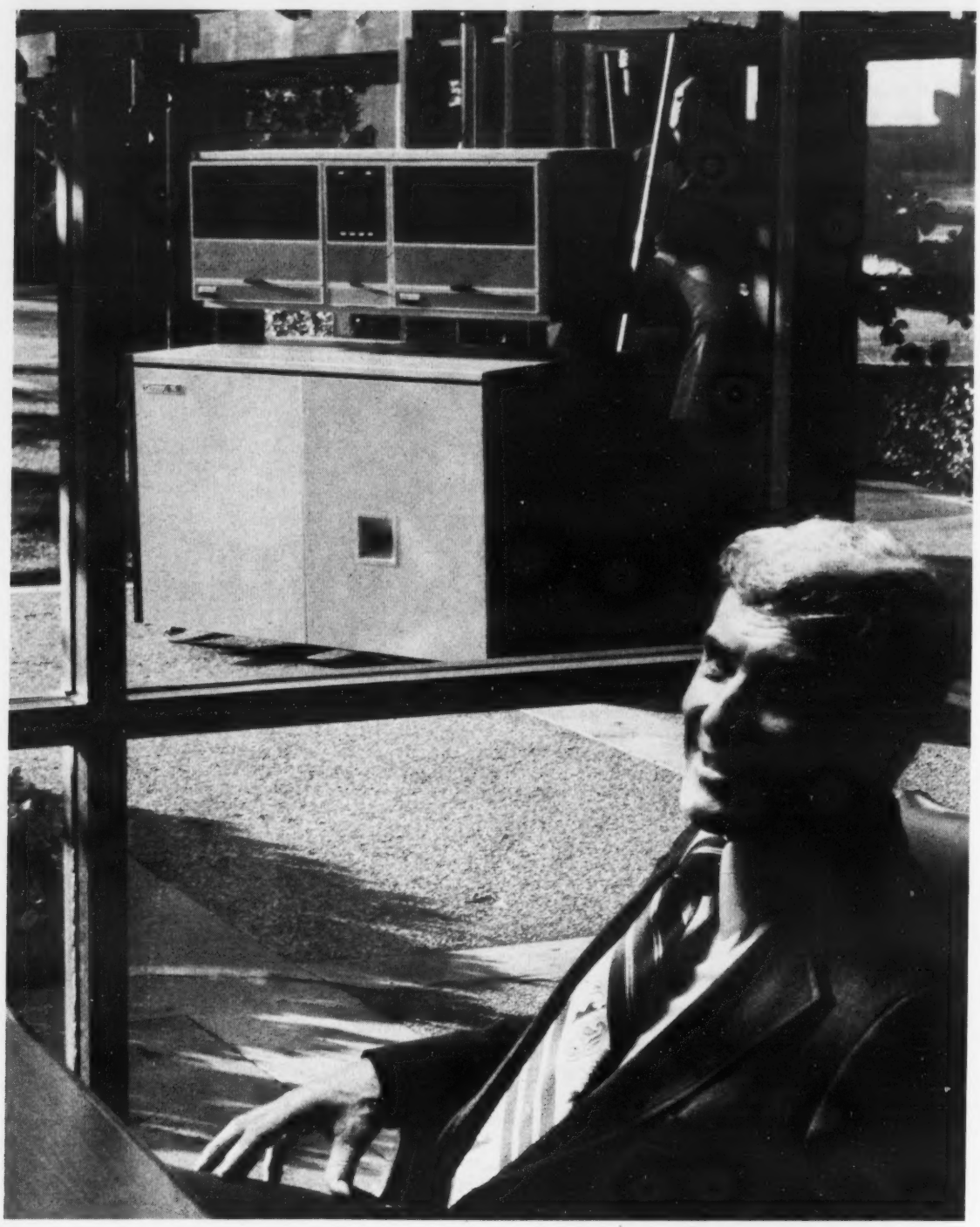

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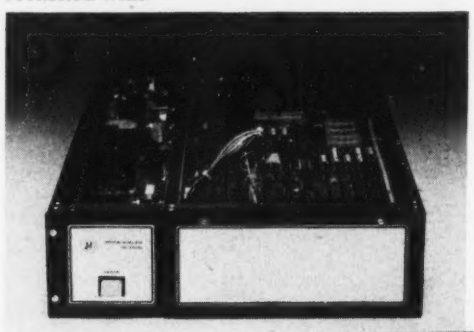

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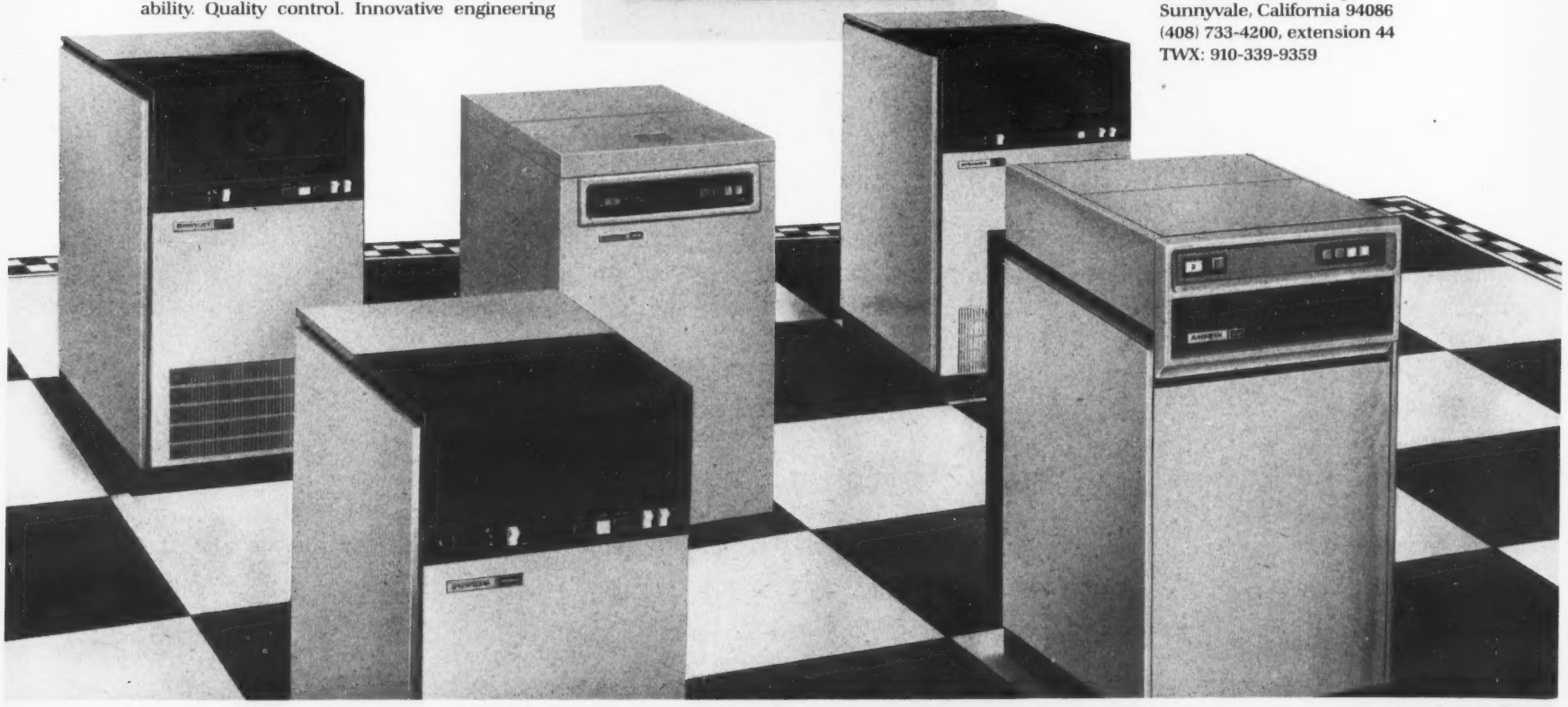

Growth Attributed to Minis

West German Market at $5 Billion

WASHINGTON, D.C. — The West German hardware market totaled about $5 billion last year and will grow 10-15% annually during the rest of the decade, according to a recent U.S. Commerce Department forecast of computer sales trends in that country.

Most of the anticipated growth will result from rising minicomputer sales, which since 1975 have grown considerably faster than large systems purchases. As minicomputer sales continue to grow during the next three years, they will steadily eclipse mainframe sales as the dominant factor in the total West German hardware market, the Commerce Department predicted.

At the same time, the microcomputer and microprocessor market will expand an average of 100% annually from its current level of about $25 million/yr, the study added.

Through 1976, the Federal Republic of Germany constituted Europe's largest hardware market with almost 30,000 large-scale installations and 84,184 minicomputer and terminal systems, the market report noted. Those totals compared with the previous year's installed base of 24,821 mainframes and 79,333 smaller systems.

Thus, during 1976 West Germany's installed base of large- and small-scale systems jumped 20% and 6.1%, respectively.

At the same time, the cumulative value of the country's large-scale installations rose 11% from about $11.2 billion to almost $12.4 billion, the market forecast reported. In the minicomputer and terminal sector, cumulative hardware values increased 27.4% from about $1.85 billion in 1975 to about $2.35 billion in 1976.

Part of the growth in the West German hardware market stems from increasing domestic production. In 1975, the country's output of DP equipment totaled about $17.2 billion. One year later, production had exceeded $19.8 billion, the study noted.

Nevertheless, West German users remain heavily dependent on imports to keep pace with their rising demand for DP equipment. During 1976, total hardware shipments from foreign countries grew 23.7% to about $12.7 billion, the Commerce Department said.

Of that total, U.S. companies, traditionally West Germany's chief hardware supplier, contributed about $455.1 millions or 35.7%.

Analyzing U.S. imports by product type, the report noted that in 1976 CPU shipments accounted for about $67 million of the U.S.'s total hardware imports to West Germany. Peripheral memories and input/output devices, meanwhile, contributed an additional $71.3 million and $92.7 million, respectively.

By contrast, West Germany's imports of U.S. CPUs, peripheral memories and input/output devices in in 1975 totaled $43.9 million, $68.6 million and $61 million, respectively the study said.

West German demand also remains high for other U.S. products, including intelligent terminals, optical charcater recognition equipment, point-of-sale terminals, databank systems and automated warehouse systems, the Commerce Department advised.

Evaluating West Germany's domestic computer industry, the report noted that Nixdorf, Europe's leading minicomputer manufacturer, boosted its sales in 1976 to $343 million, an 11.4% jump over the previous year's sales of $308 million. At the same time, the company increased its open orders to $250 million, 18.6% higher than its 1975 total, the study added.

In 1976, exports accounted for 40% of Nixdorf's total hardware sales, and a large fraction of those shipments went to American customers through the company's U.S. subsidiary, Entrex. By 1980, the West German vendor expects its hardware shipments to the U.S. to surpass $100 million for the first time, the study reported.

Siemans, West Germany's second largest computer manufacturer, increased its domestic installed base from 2,560 to 3,431 units in 1976, while IBM, Europe's leading hardware supplier, boosted its number of continental installations from 7,600 to 9,680, the Commerce Department added.

The German company also reported its sales rose 10% to $575 million in the fiscal year ended September 30,

What's Your Title?

Dictionary Updates DP Job Classifications

By Ann Dooley
CW Staff

WASHINGTON, D.C. — The Department of Labor has issued a Dictionary of Occupational Titles which updates several data processing job classifications used by commerce, industry and the government.

The new dictionary has described DP job functions more precisely than was possible in the earlier editions, which were based on perceptions gained in the early days of DP, a spokesman said.

In addition, the new volume has reduced overlapping job functions.

The fourth edition, which contains 20,000 definitions and is the first update in 12 years, has eliminated age and sex references and provides a more comprehensive and standardized base for classifying job applications and orders, making referrals, assessing worker transferability or relocating workers displaced by technological change, according to Secretary of Labor Ray Marshall.

The Dictionary is used as an aid in job placement at the 2,500 federal-state public employment service offices, as well as by local employers and testing programs, professional societies and trade associations, vocational counselors and a variety of other employment personnel.

The 1977 edition is based on more than 75,000 on-site job analyses, coordination with professional and trade associations and research on the changing occupational structure of the American economy. The Dictionary was compiled by the U.S. Employment Service of the Labor Department's Employment and Training Administration.

According to the Dictionary, the DP manager: "directs and coordinates planning and production activities of electronic data processing, consults with management to define boundaries and priorities of tentative projects, discusses equipment acquisitions, determines specific information requirements of management, scientists or engineers and allocates operating time of computer systems. The DP manager also confers with department heads involved with proposed projects to insure cooperation and further defines the nature of the project. He also consults with systems engineer, electronic data processing to define equipment needs, reviews project feasibility studies, establishes work standards, assigns, schedules and reviews work.

"The DP manager interprets policies, purposes and goals of organization to subordinates, prepares progress reports to inform management of project development and deviation from predicted goals, and contracts with management specialists or technical personnel to solve problems. The DP manager also revises computer operating schedule to introduce new program testing and operating runs, reviews reports of computer and peripheral equipment productions, malfunction and maintenance to ascertain costs and plan operating changes within his department, and analyzes data requirements and flow to recommend reorganization or departmental realignment within the company.

"The DP manager also participates in decisions concerning personnel staffing and promotions within the electronic data processing department, directs training of subordinates, prepares proposals and solicits sales of systems analysis, programming and computer services to outside firms."

Systems Analyst

The Dictionary indicates that a systems analyst, electronic data processing who can also be designated "programmer-analyst," "analyzes business procedures and problems to refine data and convert it to programmable form for electronic data processing; confers with personnel to organizational units involved to ascertain specific output requirements, such as types of breakouts, degree of data summarization and format for management reports, studies existing data handling systems to evaluate effectiveness and develops new systems to improve production or workflow as required and specifies in detail logical and/or mathematical operations to be performed by various equipment units and/or comprehensive computer programs and operations to be performed by personnel in system. A systems analyst also conducts special studies and investigations pertaining to development of new information systems to meet current and projected needs, plans and prepares technical reports, memoranda and instructional manuals relative to the establishment and functioning of complete operational systems, and may prepare programs for computer use."

Programmer's Duties

The Dictionary indicates that a business programmer "converts symbolic statements of administrative data or business problems to detailed logical flow charts for coding into computer language and analyzes all or part of workflow chart or diagram representing business problem by applying knowledge of computer capabilities, subject matter, algebra and symbolic logic to develop sequence of program steps. The programmer also confers with supervisor and representatives of departments concerned with the program to resolve questions of program intent, output requirements, input data acquisition, extent of automatic programming and coding use and modification and inclusion of internal checks and controls. The business programmer also writes detailed logical flow chart in symbolic form to represent work order of data to be processed by a computer system and to describe input, output and arithmetic and logical operations involved. The programmers also convert logical flow chart to language processable to computer, devises sample input data to provide test of program adequacy and prepares block diagrams to specify equipment configuration. In addition, the programmer observes or operates a computer to test a coded program, using actual or sample input data, corrects program errors by such methods as altering program steps and sequence, and prepares written instructions (run book) to guide operating personnel during production runs. The business programmer also analyzes, reviews and rewrites programs to increase operating efficiency or adapt new requirements, compiles documentation of program development and subsequential revisions and may specialize in writing programs for one make and type of computer."

The Dictionary indicates that a chief programmer in business "plans, schedules and directs preparation of programs to process business data and solve business-oriented problems by the use of electronic data processing equipment, consults with managerial and systems analysis personnel to clarify program intent, indicate problems, suggest changes and determine extent of automatic programming and coding techniques to use and assigns, coordinates and reviews work of programming personnel. The chief programmer develops original programs and routines from work flow charts or diagrams, consolidates segments of a program into a complete sequence of terms and symbols, and breaks down program and input data for successive computer passes, depending on such

(Continued on Page 104)

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BUSINESS/INDUSTRY
10 Manufacturer of Computer or DP Hardware/Peripherals
20 Manufacturer (other)
30 DP Service Bureau/Software/Planning/Consulting
40 Public Utility/Communication Systems/Transportation
50 Wholesale/Retail Trade
60 Finance/Insurance/Real Estate
70 Mining/Construction/Petroleum/Refining
75 Business Service (except DP)
80 Education/Medicine/Law
85 Government-Federal/State/Local
90 Printing/Publishing/Other Communication Service
95 Other: _____

TITLE/OCCUPATION/FUNCTION
11 President/Owner/Partner/General Manager
12 VP/Assistant VP
13 Treasurer/Controller/Finance Officer
21 Director/Manager of Operation/Planning/Administrative Service
22 Director/Manager/Supervisor DP
23 Systems Manager/Systems Analyst
31 Manager/Supervisor Programming
32 Programmer/Methods Analyst
41 Application Engineer
42 Other Engineering
51 Mfg. Sales Representative
52 Other Sales/Marketing
60 Consultant
70 Lawyer/Accountant
80 Librarian/Educator/Student
90 Other: _____

First Steps Taken

Bank Consortium to Ensure Emergency DP

By Jeffry Beeler
CW Staff

NEW YORK — A consortium of local banks, insurance companies, manufacturers and other businesses has taken the first step toward creating a jointly financed and operated computer center that would ensure participating firms uninterrupted DP services during extended system shutdowns.

In a meeting held here earlier this month, consortium members announced they have begun requesting bids for a study to help them evaluate the feasibility of establishing the first such shared contingency computer center (SCCC) in the U.S. Representatives of the co-operating firms will decide whether to begin development of the proposed center after they have reviewed the feasibility study's findings, which are slated for release in about six months.

As currently envisioned by its planners, the center would provide computer backup to any consortium member whose system is rendered inoperable for long periods by major fires, floods or other disasters. When not providing long-term backup services, the center would be used full-time by participating companies for testing new hardware and software acquisitions, explained Don Phelps, vice president of Irving Trust Co., one of the consortium's members.

15 Participants

To date, the SCCC proposal has attracted 15 participating firms in the greater New York area, and an undisclosed number of other organizations have expressed a strong interest in the concept. Besides Irving Trust, current consortium members include Exxon Corp., Chemical Bank and 12 other companies that thus far have chosen to keep their identities secret.

If the pending feasibility study recommends implementation of the proposed plan, each of the participating firms will contribute equally to the center's financing, operation and management, Phelps explained. At the same time, consortium members would retain independent control over the smaller, in-house backup systems each maintains as a hedge against short-term DP emergencies like power outages.

Need Recognized

Long before they formed their current alliance, most member firms had recognized the importance of creating a facility that could provide DP backup during long-term computer shutdowns, Phelps noted. But until recently, the cost of such an ambitious project had proven far too high for any single investor to seriously consider.

Now, however, if the consortium's collective financing plan is judged sound in the forthcoming feasibility study, it could make the multi-million dollar SCCC project economically viable by minimizing the amount each member would have to contribute toward total development costs, Phelps added.

Local Investigation

Largely because of its potential economic advantages, the concept of sharing computer backup facilities and expenses has grown steadily in popularity, both in this country and abroad. The idea has already attracted the interest of business groups in several U.S. cities, notably Chicago, and SCCC projects are also being discussed by prospective users in France, Phelps said.

In the local area, one of the first serious attempts to investigate the subject was initiated by the New York Clearinghouse Association, a group of 11 banks that co-operate to study and solve financial problems common to member institutions. About a year ago, the NYCA appointed a task force to assess the potential dangers of extended computer failures and to consider possible remedies for such catastrophes.

The task force in turn invited a number of other local firms including brokerage houses, public utilities and service organizations to join the discusstion and contribute their views and suggestions. Among the companies that accepted the task force's invitation were the members of the current SCCC consortium.

Steering Committee

Since then, representatives of the consortium have appointed a steering committee to oversee evaluation and planning of the suggested computer center. Besides Jacobson, the committee consists of Lee W. Spitler, group chairman and an executive vice president of Irving Trust; and Charles B. Greene, an Exxon computer sciences manager who heads the project's exective committee.

Members of the steering committee have yet to announce prospective locations for the backup facility, select the hardware configuration it will house or issue detailed guidelines governing the center's use and operation. These and other important questions will be among the topics covered in the feasibility study, Phelps said.

Federal Guide Updates DP Job Classifications

(Continued from Page 102)

factors as computer storage capacity and speed, extent of peripheral equipment and intended use of output data. The chief programmer also test runs on the computer to correct or direct correction of coded programs and input data, revises or directs a revision or existing programs to increase operating efficiency or adapt to new requirements, compiles documentation of program development and subsequent revisions and trains subordinates in programming and program coding. This individual also prescribes standards of terminology and symbology to simplify interpretations of programs, collaborates with computer manufacturers and other users to develop new programming methods, and prepares records and reports."

Engineering Programmer

The Dictionary indicates that a programmer in the engineering and scientific area "converts scientific, engineering and other technical problem formulations to a format processable by computer, resolves symbolic formulations, prepares flow charts and block diagrams and encodes resultant equations for processing by applying knowledge of advanced mathematics, such as differential equations and numerical analysis and understanding of computer capabilities and limitations and confers with engineering and technical personnel to resolve problems of intent, inaccuracy, or feasibility of computer processing. This programmer also reviews results of computer runs with interested personnel to detemine the necessity for modifications or reruns."

Programmer's Job

The Dictionary indicates that a programmer in the information system category "develops and writes natural and artificial language computer programs to store, locate and retrieve specific documents, data and information, develops computer programs for input and retrieval of physical science, engineering or medical information, text analysis and language, law, military or library science data, and writes programs for classification, indexing, input, storage and retrieval of data and facts, display devices and interfacing with other systems equipment.

The Dictionary costs $12 from the Government Printing Office, Washington, D.C. 20210.

Supermarkets View EFT as Customer Service

By Ann Dooley
CW Staff

SOMERVILLE, Mass. — The objectives of electronic funds transfer (EFT) from a supermarket viewpoint are to provide customer service at no additional cost, as well as spark cost savings and paper reduction, according to M. Dean Potts, senior vice-president for First National Stores.

Although there is no one supermarket viewpoint on EFT, the industry does not intend for EFT to become the only means for a settlement transaction, he added.

EFT should be a supplement to and not a replacement for other forms of settlement, he said. For myself, "I am in favor of EFT — under the proper conditions and in the proper form," Potts said in a recent interview.

Spectrum of Services

EFT can provide a full spectrum of services offered through a remote terminal including deposits, withdrawals, transfers, debit cards, automated teller machines and check verification.

But the use of these functions should remain voluntary, Potts noted.

To understand the issue of EFT, it is necessary to understand the economics of supermarkets, he continued.

There are more than 30,000 supermarkets in the U.S. with sales of $1 million or more annually and average weekly sales of $72,425, he said.

The average supermarket performs 7,712 checkout transactions weekly on an average sale of $9.39 — some being small one-item transactions and some being weekly shopping transactions, Potts said.

"Last year, the average net profit rate was .86% on sales — less than one percent," Potts claimed.

Store labor on the other hand, is slightly more than 50% of the total expense structure and store employees are generally well paid, contrary to popular belief, he continued.

So, what this means is that there is a high sales volume with many customers, low per customer sales and a low rate of profit, Potts noted.

Check-Cashing Agencies

Supermarkets have become the principal check-cashing agencies in the country — the value of the checks cashed in some supermarkets exceeds the total sales of that store, Potts said. Generally, however, it averages 80% or more of weekly sales, he explained.

The average value of each check is about $52 and the typical supermarket cashes approximately 1,114 checks per week, he estimated. Large-volume stores cash up to 2,369 checks, Potts said.

'This heavy volume of check transactions is why supermarket operators consider EFT," he said. "Price competition is well known in our industry — service competition is almost as important," he added.

Fewer Problems

If EFT can reduce a portion of the check transactions, it may help reduce problem areas, he said.

But for EFT to be successful, it must prove acceptable to a sufficient number of customers and that is a primary concern, he said. Most EFT systems start as check verification systems and have not gone beyond that point, Potts said. A common reason for adopting the system is to eliminate bad check losses but the losses from bad checks are only two to four cents on the dollar and are not a major item in the cost structure, Potts claimed.

Bad check loss is only a fraction of the 29.5 cents it costs to cash a check in a supermarket, he added.

The cost of coin and currency and the cost of depositing checks will not be affected under an electronic verification system, he said. However, if the system is customer activated, there can be some benefits in reduced clerical costs, Potts explained.

Customer's View

Another concern about the system is the costs perceived by the customers, according to Potts. "We do not want them to believe that we are adding expensive systems that will add to the cost of their groceries, whether or not they are one of those using the system," he said.

The customer spends two to three times longer shopping for the items than waiting to be "checked out," however most customers perceive the time spent to be the opposite; that is more time spent waiting in line than shopping, Potts said.

The industry cannot afford to add anything to checkout process time that will slow that operation. "So, before we begin to attach point-of-sale EFT devices to our registers, we must be convinced that we will not lengthen lines at our checkstands," he said.

Another important factor is that check verification or full EFT must have little or no involvement of store personnel which would increase the already high labor costs, he added.

Customer Activated

Also, if the customer activates the system himself, he cannot blame errors or malfunctions on store employees, he noted.

Systems that scan a customer's account before giving a "clear" indication are other potential sources of aggravation for the supermarket operators. A customer will often mail his paycheck to his bank on Friday and draw checks against that deposit on the weekend.

However, an on-line system would not allow customers to "float" their accounts and would create a situation where the store manager must face losing a customer or violate the system, Potts pointed out.

Economic Failures?

The industry is also concerned that some financial institutions, in their anxiety to compete, may establish systems which are technological successes and economic failures, Potts said.

After getting customers used to the service, the store might find it necessary to discontinue or charge for the service. And the customers would blame the supermarket, he added.

Supermarket operators are also concerned that EFT networks may be regulated as public utilities or as part of the banking system.

If EFT were to be regulated as a public utility, it would not develop as quickly from a technical or cost standpoint, the industry members fear.

Applicable Regulations

Further, they also express concern about which banking regulations would be applicable to the supermarkets housing terminals if EFT were to become part of the banking system, Potts said.

For an EFT network to achieve the supermarket's objective of customer service, it must be broad based and although sponsored by a financial institution, must not be limited to customers of the institution, he said. The system should not have any perceived or actual increase in operating costs, should not lengthen checkout time, should be customer activated and should have a strong chance of survival, Potts said.

Automating Acquisitions?

CHICAGO — "Automated Acquisitions: What's Good? What's Bad? What's Missing?" will be covered here at the annual conference of the American Library Assoc. to be held here on June 27, 1978.

Speakers will discuss the automation needs of libraries and the problems, advantages and justification of automated acquisition systems, a spokemsan explained. A state-of-the-art review of current systems and their impact on publishers, wholesalers and library activities will also be presented, he said.

Participants in the program will include Richard M. Dougherty, Director of Libraries at the University of Calif.; Linda Crismond, University of Southern Calif.; and John Secour, Yankee Book Peddler, the spokesman stated.

Additional information can be obtained from the Assistant University Librarian for Technical Services, Duke University Library, Durham, N.C. 27706.

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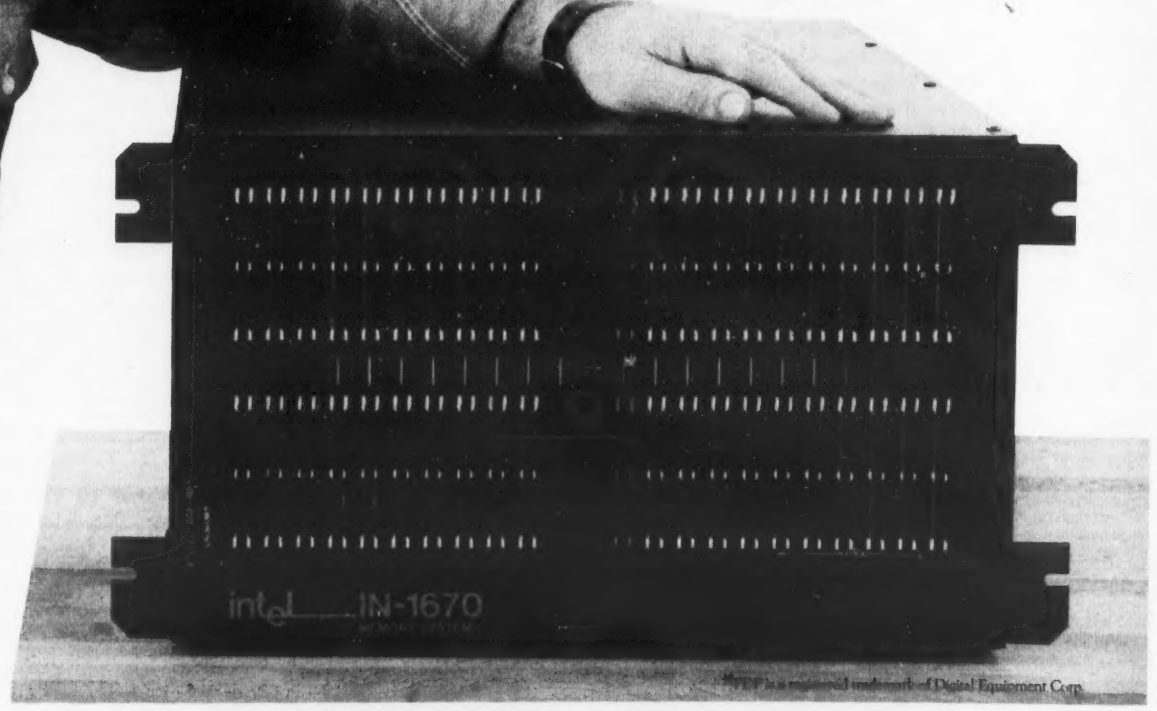

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